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CW 5/8

## Service Bureau Seeks \$500,000

# Court Date Set in Suit Over Prime Supermini

By Jake Kirchner  
CIVIL RIGHTS BUREAU

BALTIMORE — A small service bureau here that bought a 32-bit information 5000 system from Prime Computer, Inc. three years ago will go to court next month to try to get its money back.

Quality Data Processing, Inc. is charging Prime, the Minicomputer Co. of Linthicum, Md., DataTel, Inc., an Alexandria, Va., authorized Prime dealer, and the DataTel representative that sold the system to Quality with 12 counts of breach of warranty, breach of contract, fraudulent misrepresentation and negligence. The suit, scheduled for trial in Baltimore City Circuit Court June 21, is seeking \$500,000 in damages.

A Prime spokeswoman at company headquarters in Natick, Mass., declined comment on the allegations in the suit, citing company policy against discussing any matter in litigation against the firm.

The suit alleges that "from June 12, 1980, the data installation started on Quality's Prime Information 5000 system. Quality experienced substantial hardware and software problems and inadequate hardware and software support. The hardware and software did not work properly and

never did as long as Quality tried to use the system.

But according to the attorney representing Quality in the suit, J.T. Westemeier of the Washington, D.C., law firm of Abrams, Kovacs, Westemeier and Goldberg, that description does not begin to illustrate the extent of the problems Quality had with the Prime system, problems which he says caused as much as 55% downtime. For a small company such as Quality, these alleged problems could have been disastrous, according to Westemeier.

### Previous Configuration

Quality, established in 1972, currently has a staff of 25 and had revenues exceeding \$1 million last year, according to its president, Robert Miller. At the time of its Prime purchase, the company also was running a Miller complaint, No. 50 and a Harris Co. 120 system.

The firm initially acquired the

Prime Information 5000 system, with 1M byte of main memory, two 300M-byte disk drives, a printer, card reader and 10 CRT terminals, plus software that included Cobol and RPG-11 compilers, to handle one major application. That job, Miller said, was to perform recordkeeping and reimbursements for a third-party insurer for thousands between 120,000 and 140,000 medical prescriptions per month.

That application was never satisfactorily run on the Prime system, according to the suit, which charges that Quality's problems with Prime extended to Prime's Primos operating system and other software, as well as with the printer and terminals supplied as part of the contract.

Miller's complaints against Prime and its agents are described in the suit in a 19-page log that details the operation of the Prime system. Miller claimed that he began keeping the log after his initial problems

with the system.

At the time the contract was signed, Prime had the inside track to be the company selected by Quality in its desire to become a single-vendor shop, according to Miller. Quality is now relying on an IBM System/38 and, according to the suit, "has experienced almost no downtime... since converting... On the average, Quality has experienced less than 10 minutes per week downtime with its IBM system and has realized substantial gains in production and savings in personnel costs."

Prime refused to take back the Information 5000, which Quality bought for \$262,500 and eventually sold through a used equipment broker for \$145,000. A \$3,625 brokerage commission left Quality with a loss of \$126,000, according to the suit. Added to that was approximately \$200,000 in additional expenses incurred in trying to make a go of the Prime system, the suit contends.

## University Charges Nine in DP Fraud

(Continued from Page 1)

defendants in the suit, as are Vickie D. Cannon, president of Virtue Computing Systems; Kimberly S. Newton, an SIU employee, who is also allegedly known as Brooke Channing, president of Nova; and C. Collins Carroll, president of Angelina Computer Sales, who was the brother-in-law of another defendant, E. Hubert Massey, at the time of the transactions.

The three companies reportedly were operated solely to conduct business with the university. Illinois state law does not require competitive bidding for the purchases outlined in the suit.

However, Shari R. Rhode, the chief trial counsel for SIU's Carbonate campus, noted that the university has since instituted regulations requiring competitive bidding for

computer purchases.

Although Bateman left SIU in 1981, the alleged computer scam was not uncovered until 2 1/2 years after his departure. According to Rhode, evidence of fraud surfaced after Bateman's successor had an audit taken of the university's computer equipment and expenditures. Certain questions arose that eventually led to the filing of the suit, she said.

The suit cites several instances in which equipment was purchased or leased via a third party at inflated prices rather than directly from the vendor, which would have been more cost-effective. It also accuses Bateman of pocketing \$13,300 in fees for services performed by SIU's computer center for a Texas clinic and of stealing almost \$3,000 from funds designated for a nonprofit account he established for the support of the

Computer Services Department.

Also, three other defendants are accused of conspiring to perform services for the university that were never rendered while they were full-time employees or graduate students at two other southern universities. Bateman and George A. Flummer, a former assistant center director of computing services, allegedly received the university in their hiring recommendations of the three.

During their "employ," the three defendants are alleged to have collected a total of \$71,700 in salaries in addition to fringe benefits, travel and other expenses.

As a result of the pending SIU suit, Bateman has resigned from the University of Maryland, where he became the assistant vice-president of general administration after leaving SIU. The post was offered to him by former SIU President Warren Brandt, now vice-president for general administration at the University of Maryland.

Bateman, who could not be reached for comment, has reportedly denied that he was asked to leave the University of Maryland and maintained that Brandt asked him to stay. He was quoted as saying his effectiveness had been reduced and he did not want to cause any problems for the university. He reportedly plans to become a private consultant in either Maryland or Texas.

## ICCA Conference To Start Next Week

HOUSTON — The Independent Computer Consultants Association (ICCA) will hold its 1984 annual conference here May 16-18.

Founded in 1976, the ICCA is a professional association for computer consultants representing some 1,000 firms.

The conference registration fee is tentatively set at \$150 for ICCA members and \$200 for others. The association can be reached through Box 27412, St. Louis, Mo. 63141.

## NCL Data Head Pleads Innocent In Hitachi Case

SAN JOSE, Calif. — The head of a small Silicon Valley electronics company last week became the first defendant not to plead guilty in the IBM vs. Hitachi Ltd. trade-secrets theft case.

Tom Yoshida, president of NCL Data, Inc. in nearby Santa Clara, pleaded innocent to charges of conspiring to transport stolen IBM technology. Through his attorney, Yoshida indicated his readiness to stand trial beginning May 16.

The unexpected plea was entered May 2 before federal Judge Spencer Williams and set Yoshida apart from the rest of the defendants in the Hitachi side of the IBM industrial espionage case. Altogether, the legal wrangle involving IBM and the Tokyo-based electronics giant has resulted in the filing of criminal charges against 13 Hitachi employees and associates, all of whom, except Yoshida, have pleaded guilty.

In protesting his innocence and choosing to take his case to trial, Yoshida has virtually guaranteed the eventual exhibition of some currently secret Federal Bureau of Investigation videotapes, which allegedly show the defendant engaging in a criminal conspiracy. The recordings were made clandestinely as part of a seven-month federal undercover investigation into a Japanese plot to steal proprietary IBM systems technology and transport it out of the U.S. The sting operation yielded indictments against Hitachi, Mitsubishi Electric Corp. and more than 20 of their employees or suspected agents.

## Mass. Crime Bill Classifies Electronic Data as Property

BOSTON — A piece of legislation that sponsors hope will encourage Massachusetts businesses to prosecute computer criminals more aggressively is nearing approval in the state legislature. Committee of the commonwealth's House of Representatives here.

The bill would amend the state criminal code to classify electronic impulses as property, opening the door for offenders to be prosecuted under state larceny statutes for the value of information that is recorded electronically.

The bill is in its third reading in the House Criminal Justice Committee after being given a reading on a voice vote without debate last week. It is intended to fill "a rather broad gap [in the law] that needs to be addressed," according to Rep. Paul White (D-Boston), chairman of the committee and the bill's cosponsor.

"This will protect the computer

industry substantially because it will not be exposed to potential losses [since] our law did not cover areas like this," White said. He noted that losses from theft of computer data are "awfully hard to get because the companies seem hesitant to talk too much about being ripped off on a regular basis. But we get the feeling that there has been substantial loss over the years."

White said the matter gained legislative attention after a 1981 state Supreme Court decision that a person who stole a magnetic tape could be prosecuted only for the value of the tape itself, not the electronic impulses contained on it.

The bill will go to the House floor after the third reading. "I think it will pass," White said. "We just have to engage in more education with some of our colleagues who get confused about something as highly technical as this."



## Ada Development Systems Combine Rolm Compiler With DG Superminis

By Lois Paul

CW Staff

WASHINGTON, D.C. — A group of Ada software development work center systems that combine Rolm Corp.'s Ada software and Data General Corp.'s family of 32-bit Eclipse MV computers was unveiled here last week by the two firms. Both vendors will offer the Ada Work Center systems under a joint marketing agreement.

DG and Rolm also announced an agreement under which current users of the superminis can acquire Rolm's Ada compiler and Ada Development Environment (ADE) software from DG.

The multiuser Ada Work Center systems are intended for developing, testing and debugging Ada applications. Because Eclipses are program- and I/O-compatible with Rolm's MSE/800 military computer, debugged Ada applications can be run on either DG or Rolm processors.

The Ada compiler is said to be a full Ansi-standard version of the language sponsored by the Department of Defense (DOD). It reportedly has been tested using DOD validation tests and is expected to undergo formal validation by the Ada Joint Program Office in the second quarter of 1983.

The ADE software included with the Ada Work Center is an integrated set of tools for application program design, development, testing and documentation.

Three Ada Work Center systems will be offered in three configurations, based either on DG's Eclipse MV/4000, MV/6000 or MV/10000 supermini. The systems may be expanded by the addition of memory, peripherals, terminals and software.

The MV/4000-based, entry-level Ada Work Center system consists of the ADE, which includes the Ada compiler, 147M to 554M bytes of disk storage, a magnetic tape unit and a system console.

The high-end system is said to be configured for a larger number of Ada workstations and 8M bytes of main memory.

The Ada Work Center will be demonstrated at the National Computer Conference next week in Anaheim, Calif. Delivery of the systems are scheduled for the last quarter of 1983.

Prices range from \$158,965 to

### Security Workshop Slated for July 18-19

NEW YORK — The Computer Security Institute will hold a two-day computer security workshop here on July 18-19 focusing on the concerns of users of IBM and plug-compatible processors.

Sixteen half-day workshops are scheduled. Four optional full-day seminars are slated for July 20.

The program costs \$495 from the Computer Security Institute, which is located at Department 1P, 43 Boston Post Road, Northborough, Mass. 01532.

\$409,665 for the basic system, including the first year of software support.

The license for just the ADE software, including the Ada compiler, is available for users of Eclipse MV and Rolm MSE/800 processors. It is priced at \$82,800; the software is available for delivery 30 days from receipt of order.

Additional information about the Ada Work Center systems can be obtained from Rolm at One River Oaks Place, San Jose, Calif. 95134, or from DG at 4400 Computer Drive, Westboro, Mass. 01580.



Dennis Faboojian (left), vice-president and general manager of Rolm's Mil-Spec Computer Division, and Bob Miller, senior vice-president of DG's Business Division, pose with an Eclipse MV/4000-based Ada Work Center at the 32-bit development system's introduction last week.



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# Poll Finds Women Earning More in OA, Sales

By Susan Blakeney  
CW Staff

WASHINGTON, D.C. — Although women's salaries generally trail behind those of men in the DP occupations, women are outpacing men in two fast-growing areas — office automation and computer equipment sales.

Such were the findings of a survey recently released by Women in Information Processing (WIP), headquartered here. The survey, conducted last year, looked at 30 position categories representing 12,800 female managers and professionals from 1,000 firms throughout the U.S. and Europe.

The salary survey showed women faring better financially where they market high technology, where they outearn men by as much as \$18,000 annually, and when they work as DP auditors, where they earn slightly more than men.

Blurred salary lines between the sexes occur in positions such as vice-president of DP or management information systems, where women earn the same or slightly less than men. The same is true for female senior analysts, project leaders and consultants, according to the survey's findings.

Women still earn less than male information systems directors, systems programming managers and operations managers.

## Purpose of Study

The purpose of the study, according to Elizabeth Elbit, WIP spokeswoman, is to aid women in the career-planning process in information processing industries. "The report is more than a snapshot of past salary trends," she commented.

Furthermore, Elbit stated, "One of the difficulties with a project such as this is that the target moves so quick-

ly. For example, we found many fairly junior individuals in new, unstructured positions within the microcomputer arena earning higher salaries than the majority of vice-presidents in the mainframe arena," she said.

The survey study pointed out that fewer than five years ago, one industry expert "could see no earthly reason why anyone would buy a personal computer." Today, the microcomputer marketplace is exploding, and WIP's study is urging its constituents to take heed of the following trends:

- Noncomputer professionals in the user environment (such as executives, managers, secretaries and salesmen) have a unique, short-lived opportunity to become knowledgeable in the new technology, thereby accelerating their careers significantly.

- Computer professionals in the user environment (programmers, data base management systems specialists, analysts and information system designers) have an opportunity to expand their horizons to include such areas as communications, networking, graphics, distributed processing and office automation technologies.

- Totally new and high-paying opportunities have already surfaced with respect to integrating 16-bit microprocessor operating systems with existing software currently running on mainframes or minicomputers.

- The key areas to be in now are software development, marketing, customer support and consulting. Jobs in these areas will continue to emerge and outpace other information-industry jobs.

Copies of the WIP survey are available for \$4 from WIP headquarters, Lock Box 39173, Washington, D.C. 20016.

	ALL INDUSTRY			ALL INDUSTRY FEMALES			WIP FEMALES		
	20%	Median	80%	20%	Median	80%	20%	Median	80%
Vice-President, DP or MIS									
Small	\$34	\$40	\$48	\$33	\$39	\$43	\$33	\$40	\$48
Medium	37	48	60	34	43	53	37	47	60
Large	40	58	88	39	53	88	40	58	84
Information Systems									
Director									
Small	26	41	47	24	36	52	27	39	45
Medium	32	47	59	28	41	50	32	45	62
Large	38	57	81	31	48	61	37	53	74
Systems/Programming Manager									
Small	25	35	40	23	32	36	23	34	38
Medium	31	42	53	28	37	46	30	41	50
Large	35	47	56	31	41	52	33	45	57
Operations Manager									
Small	23	27	30	18	23	28	20	25	28
Medium	24	31	37	21	26	33	23	28	35
Large	25	38	48	24	36	42	25	37	46
Nonmanagement Positions									
Systems Programmers									
6 Months to 1 Year	18	25	30	18	24	27	16	24	28
1 Year to 2 Years	20	27	33	18	26	30	18	26	30
2 Years to 4 Years	20	30	36	21	28	38	21	28	33
Over 4 Years	28	37	44	25	34	40	26	35	41
Data Base Specialists									
6 Months to 1 Year	18	25	30	18	23	29	18	24	30
1 Year to 2 Years	22	27	32	21	24	30	21	27	31
2 Years to 4 Years	25	32	38	22	27	36	22	31	36
Over 4 Years	27	38	46	26	33	42	26	37	44
Commercial Programmers/Analysts									
6 Months to 1 Year	15	20	25	13	20	22	14	21	24
1 Year to 2 Years	18	22	28	15	22	28	16	23	28
2 Years to 4 Years	18	25	33	18	25	32	18	26	33
Over 4 Years	21	30	37	19	28	34	21	31	36
Engineering/Scientific Programmers/Analysts									
6 Months to 1 Year	16	20	26	14	19	25	15	21	26
1 Year to 2 Years	17	22	27	19	22	28	18	24	27
2 Years to 4 Years	20	26	32	24	31	37	20	27	31
Over 4 Years	25	31	37	22	28	36	26	32	38
Other									
Programmers/Analysts									
6 Months to 1 Year	14	20	27	12	19	24	14	21	26
1 Year to 2 Years	15	22	28	18	23	29	16	23	28
2 Years to 4 Years	22	30	36	20	28	36	23	30	38
Over 4 Years	28	38	48	28	33	41	27	37	51
Communications Programmers/Analysts									
6 Months to 1 Year	19	25	30	17	22	27	18	25	30
1 Year to 2 Years	21	27	36	18	24	32	20	27	37
2 Years to 4 Years	23	35	42	20	30	37	23	34	43
Over 4 Years	28	40	48	26	36	44	28	41	48
Machine/Computer Operators									
6 Months to 1 Year	12	19	17	12	15	17	12	15	17
1 Year to 2 Years	14	17	18	14	17	19	14	17	18
2 Years to 4 Years	16	18	20	16	19	21	16	18	20
Over 4 Years	17	19	21	17	20	22	17	19	22

Annual Compensation in Thousands of Dollars

Source: WIP

## Managers on the Move

EDWIN A. WHITE has been promoted to vice-president of computer operations for Federal Express Corp. in Memphis, Tenn. He will be responsible for planning, organizing and controlling the company's multiple data processing centers, including installation of new equipment and the operation of computer and

data communications systems.

White joined the company in 1978 as a manager of technical services in the Computer Operations Department.

White served in the Army for four years and graduated from the Defense Language Institute with a major in Persian. He attended the University of Virginia and received a degree in data processing from State Technical Institute in Memphis.

JOHN A. MALINSKY has been appointed an assistant vice-president at Ludlow-Boston Manufacturers Mutual Insurance Co. in Waltham, Mass.

Malinsky joined Arkwright-Boston in 1982 as manager of technical services. For the previous six years, he was manager of technical support at Ludlow Corp. He has also served as data base administrator at Siriz Rite Corp., a DP consultant at Systematic, Inc. and a programmer at Bostonian, Inc.

Malinsky holds an associate's degree in computer science and data processing. He has also studied business administration at Boston State College.



Edwin A. White

## Corrections

"Omegamon/MVS Enhanced for IBM" [CW, May 2] noted that users of Candle Corp.'s Omegamon/MVS and Dexan/MVS software will receive support for these products under IBM's MVS/XA operating system at no additional cost. The vendor has since clarified this by stressing that only CPUs that were licensed for Omegamon/MVS and Dexan/MVS prior to July 15, 1982 will be provided MVS/XA support at no additional cost.

In "Btasi/1 Works with Series/1" [CW, April 11] it was reported that with Business Management Systems, Inc.'s Btasi/1 software, applications programs require a 36K-byte control block. Applications programs actually require a 36-byte control block with the Btasi/1 software.

In "Off the Press" [CW, April 11], the title of James Martin's book on

software engineering methodology was given as *Program Design is Probably Correct*. The correct title is *Program Design Which is Probably Correct*.

The Promtloc Documentation Methodology described in "Methodology Boosts Publications Group's Output" [CW, March 28] was incorrectly identified as being sold by Progressive Communications, Inc. of Colorado Springs, Colo. The methodology is sold by Promtloc, Inc. of Colorado Springs.

In "Tape System Boasts Error-Free Transmission" [CW, March 21] it was incorrectly reported that an 85-in., single-density system runs at 800 bit/in. It should have said the tape format is nine-track 800 bit/in. Also, it was reported that the Taptran interface costs \$2,000; the facsimile interface costs \$2,000.

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Speaking of names, maybe we ought to change ours to the "Bureau of Missing Software Programs."

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**THE BAD OLD DAYS:** Most of the VM Backups now in use are low-level programs, to put it charitably (Subterranean might be a better word.) They simply use too many machine resources. And they require too much manual assistance from the operations staff.

As a result, much of the Backup, Recovery and Copying done in the nation's VM centers is just plain lousy. It's often done haphazardly...sporadically...or not at all. Heaven only knows how much this has cost in terms of destroyed data, incomplete records, and damaged reputations.

**GOODBYE TO MICKEY MOUSE:** SYBACK changes all that. Here's what it can do for you in the three areas that really matter.

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# PE Scientific Desktop Boasts Color Graphics

By Susan Blakeney

CW Staff

OCEANPORT, N.J.—In addition to announcing its Model 3250 processor, Perkin-Elmer Corp. today introduced a scientific desktop computer that boasts color graphics and optional local mass storage capabilities.

The Model 7500 Scientific Computer, the newest member of PE's Series 7000 Professional Computer family, is based on Motorola, Inc.'s MC68000 16-bit microprocessor and is said to be fully compatible with PE's Series 3200 line of superminicomputers. It is intended mainly for multiuser program development, data acquisition, data reduction and graphics display in both the laboratory and the office, a PE spokesman said.

The Model 7500 is available in both color and monochrome versions. Each includes two 5.25-in. floppy disk drives with a combined formatted storage capacity of 640K bytes; the vendor's Idris operating system, reportedly compatible with the Unix operating system developed by Bell Laboratories; two RS-232 ports; an Ascii keyboard with 32 multiuser-defined special function keys, a numeric pad, cursor and screen control keys; a Basic interpreter; and keyboard overview.

The monochrome version of the system includes 416K bytes of memory and a video module with 13-in. monitor. It sells for \$8,400.

The color version has 640K bytes of memory and a video module with a 13-in. monitor reportedly capable of displaying any combination of 16 colors out of a palette of 27, the PE spokesman noted. It costs \$10,800.

The graphics portion of the system consists of a color bit map that is said to allow colors to be changed instantly, 256 by 720 pixel resolution, and split screens with up to eight windows.

Optional hardware features include a 10M-byte Winchester disk, an IEEE-488 interface, two additional RS-232 ports and a black-and-white or color graphics printer.

Language support for the Model 7500 includes Ansi Fortran 77, Basic and C. A file transfer feature with RS-232 connection to and from other

Model 7500 workstations or to and from the vendor's Series 3200 superminis will be available in September, the vendor said.

Basic, Fortran and C programs running on other computer systems may be transported to the PE workstation, its vendor said. Included with Idris is a menu-driven help system for obtaining on-line documentation on the operating system.

The 7500 is available "a la carte" and in two specially packaged configurations. The Programmer's Workstation includes the basic

monochrome version of the Model 7500, 10M-byte Winchester disk, Fortran 77 and C compilers and test processing software. This configuration costs \$12,400.

The packaged Scientist's Workstation includes the color version of the Model 67500, IEEE-488 interface, 10M-byte Winchester disk, Fortran 77 and C compilers and word processing software. This package is priced at \$15,100.

The systems are available immediately from the vendor at 2 Crescent Place, Oceanport, N.J. 07757.

## PE Expands Supermini Line Downward

(Continued from Page 1)

timer feature and a loader storage unit, PE said. The board is said to allow any line to be synchronous or asynchronous; it transmits data at rates up to 19K bit/sec. The parallel print port operates at speeds up to 1,200 line/min.

An optional third board includes up to 3M bytes of memory and reportedly enables users to expand the system to its maximum memory size of 4M bytes. Memory is expandable in increments of 1M, 2M or 3M bytes, a spokesman noted.

The system's small size is attributed to a number of new technologies, according to PE. For instance, the memory board utilizes "leadless carrier packaging" to reduce the physical size of the memory substantially, the PE spokesman noted.

The MPC saves space by using a series of on-board microprocessors to implement commonly used I/O functions. Very large-scale integration and large-scale integration tech-

nology further enhance processor reliability by permitting higher density packaging on each board and reducing the number of board interconnects, the spokesman added.

Integral to the processor is a Memory Manager that reportedly provides memory segmentation, relocation and protection under operating system control. This feature provides translation of a program address into a physical memory address and ensures that a task can exist in a fully protected environment, the spokesman noted.

Other features built into the system include error-checking and correcting memory, a hardware error logger, power fail/auto restart, illegal instruction traps, CPU and MPC board self-test and the capability for remote diagnostics, PE said. Since the system is compatible with other PE computers, users reportedly can develop applications on larger PE systems and then migrate them to the Model 3205 for program execution.

tion, the vendor pointed out.

Using the vendor's multitasking OS/32 operating system, the Model 3205 runs all 32-bit languages including the universally optimizing Ansi 77 Fortran VII, Pascal, Cobol, Basic, Cal Macro, RPG-III and Coral 66. Two sets of utilities and third-party application software is also available for this system, PE said.

A packaged configuration, including the 3205 processor with 512K bytes of MOS memory, 25M-byte fixed and 25M-byte removable disk drives, eight communications lines, a line printer port, memory error logger, timer, clocks, watchdog timer, power supply and disk controller costs \$24,950.

Additional memory for the 3205 costs \$4,900 per 1M byte for 1M byte to 2M bytes, \$4,100 per 1M byte for 2M bytes to 4M bytes, and \$4,000 per 1M byte for 4M bytes to 6M bytes.

The system is slated for delivery in October from PE at 2 Crescent Place, Oceanport, N.J. 07757.

## Travelers Becomes First to Bring Up MVS/XA

(Continued from Page 1)

er, the firm "can define up to four times as many devices," Reynolds said.

IBM approached Travelers at the beginning of 1982 with the prospect of becoming an MVS/XA beta test site. Hoping to gain at least 1M byte of virtual storage by getting MVS/XA ahead of time, the firm agreed. As it turned out, we got 2M bytes, twice as much as we had planned, and it has been excellent," Reynolds reported.

Approximately 100 man-months were assigned to the conversion of the 3081 Model K to MVS/XA. However, before the system could move to XA, it had to be upgraded first to MVS/SP 1.3, and the latest releases of products, such as TSO/E (Extensions) and IMS 1.2, had to be installed.

But the most difficult part of the project — because of sheer numbers — was converting the software packages from independent vendors that were running on the 3081 Model K. The process of bringing in new releases of both the IBM and the independent software was speeded up by the ESP environment. "We would probably have gone to all of these vendors in a six-month to a year time frame. We compressed that down into a smaller window and we con-

verted it all," Reynolds said.

Migration from MVS/SP 1.3 to MVS/XA was relatively painless for Travelers, according to Reynolds.

"Excluding the third-party manipulation of ESP agreements and allowing them to bring in new code, we had no user fallout from it. No application programs, no application JCL and no application assembler code needed to be changed. It truly was very, very smooth."

Moreover, he added, "about 15% of our authorized assembler programs — which are operating system-type utilities or operating system-type code — needed to be changed." He attributed part of the ease of the migration to the conversion notebook provided by IBM.

Reynolds said benefits from conversion

version to MVS/XA included an increase in the operating system's local area from 3M bytes to around 7M bytes, "which allows us to run a much bigger IMS and more TSO users on a host." In addition, Travelers is beginning to add more IMS terminals and TSO users.

While memory usage and paging is up, an increase in throughput has not been detected, Reynolds said. There has been some increase in CPU overhead, but not enough to concern users. The operating system has provided improvements in the way I/O is handled, which has helped, and response time is about equal to that afforded by MVS/SP 1.3.

"We did not have to do anything one way or the other to tune the system for XA. We brought it up with

the same parameters that we brought it up for SP 1.3 and it is running fine," he said.

Reynolds said the large conversion effort from 350 architecture to the 3380 controllers required to take advantage of MVS/XA's dynamic path allocation facility has been very smooth. "The hardware seems to be extremely stable, and the response time is fantastic," he added.

To date, MVS/XA has been transparent to users at Travelers, Reynolds said. "They used to be concerned when they logged on whether they were running under XA. What we are finding now is that they do not even bother to ask. They are up; they are running; they don't notice any difference. That is really the way we like it."

## Insurer Decides to Hold Off on 31-Bit Addressing

HARTFORD, Conn. — Travelers Insurance Co. is not planning to convert its programs to take advantage of IBM's MVS/Extended Architecture (XA) 31-bit addressing capability "until we can be sure we have XA on all of our systems in the wing," Dave Reynolds, assistant director of Travelers Computer Science Division, explained recently.

In the past, the firm limited the re-

gional size of programs to 4M bytes, but this will be unnecessary with MVS/XA. "You need 31 bytes, and we are only using 16M bytes. So almost all of it could be the local or private area," Reynolds said. "It would allow for 1G byte of storage for a local area for the system to use and you wouldn't have to concern yourself about running out of local area."

Travelers plans to migrate to the

new versions of MVS/XA and its related products, which will be available this June. The goal is to get enough virtual storage relief "we don't have to talk about it anymore," Reynolds said.

In addition, the insurer is anxious to add the virtual storage tracking facility that will be available with the enhanced version of the Resource Management Facility.

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WINTER 1985  
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# Experts Clash Over Feasibility of RFI Espionage

(Continued from Page 1)

thought to be safely hidden in computer systems. Others, however, see the idea of monitoring RFI to steal information is impractical — and downright ridiculous.

RFI is not a newly discovered phenomenon; DP groups have reported picking up signals from external sources, such as radio transmitters and microwave transmission systems, which have caused mysterious hardware and software glitches (CW, July 19).

Those who are worried about the electronic espionage potential of RFI, like Nye, point to the more sophisticated and cheaper computer systems and the improved listening devices such as spectrum analyzers and di-

**'Robert H. Courtney, currently a private consultant based in Kingston, N.Y., and formerly security director at IBM, maintains that the NSA's secret standards could wind up costing vendors "untold millions to fix a problem that doesn't exist. It's a magnificent myth."**

rectional antennas available today. They have expressed concern that it could become relatively easy to pick up and use radio waves from computer systems.

So has the National Security Ad-

ministration (NSA), which a spokesman said is actively soliciting vendors to make spy-proof components for highly classified government applications. The NSA's unclassified code name for "compromising emanations" is Tempest. However, the actual definition of a "compromising emanation" is classified.

The NSA's standards for protecting against Tempest are also classified. But Nye said the NSA standards involve shielding computer systems and terminals with a radio wave insulator, such as a wire mesh, or building cabinets of an insulating material.

Robert H. Courtney, currently a private consultant based in Kingston, N.Y., and formerly security di-

rector at IBM, maintains the NSA's secret standards could wind up costing vendors "untold millions to fix a problem that doesn't exist. It's a magnificent myth."

Nye does not agree. In fact, he is worried that even those computer sites which have installed data encryption devices would not be safe from RFI interception. It is conceivable, Nye said in a recent interview, that unencrypted information could be scooped out of the atmosphere; the RFI from sensitive information displayed on a CRT screen, for example, can be picked up from up to 100 yards away. And, he contended, someone with a sophisticated directional antenna could pick up RFI from a single CRT terminal in a crowded office building.

However, other security experts maintained that the extreme difficulty of picking up specific RFI signals makes this an unlikely scenario. Courtney believes it would take a truckload of mainframe processors and very sophisticated listening equipment to monitor RFI emanations from a moderately sized company.

Furthermore, Courtney noted, the RFI monitoring technique is passive. The eavesdropper has to wait until someone inside the target company decides to use the desired information. That process, Courtney said, could take weeks or even months of monitoring.

It is much easier and much cheaper, Courtney said, for a corporate spy to bribe someone within the company to steal information. It is also easier to tap directly into the target company's computer system and gain immediate access to corporate secrets — or to monitor the telephone calls of top executives.

Moreover, figuring out which signals to monitor in a large company can be a complex task, noted Jim Schweitzer, systems security technology manager at Xerox Corp. in Stamford, Conn. "A very sophisticated millionaire could do it," Schweitzer said.

A spy trying to monitor a mainframe computer system, for example, would have to keep track of dozens of terminals and tape and disk drives, he said. That would require a computer system sophisticated enough to pick out the signals given off by those specific devices, weed out hundreds of other emanations and convert the right ones into data.

Even then, Courtney said, interference from all the other electronic devices in the building may distort the desired RFI to an unusable state.

Nye, however, said that a would-be eavesdropper armed with some high-class listening equipment — such as a sophisticated directional antenna — and a microelectronic device could monitor one person's CRT terminal in a crowded office building. If he knew the location of the terminal and could identify some of its unique RFI characteristics, the task would be that much easier, he added.

But even assuming the right terminal could be monitored, the would-be spy would then have to sit down and read through reams of meaningless information just to glean a few secrets, Schweitzer said.

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# MIS Manager, Staff of Seven Hike Output From 75 to 6,900 Programs in Seven Years

By Lois Paul  
CW Staff

WASHINGTON, D.C. — What would you say if a management information systems manager told you his DP staff of seven had increased its productivity from 75 to 6,900 internally developed programs in seven years with absolutely no turnover?

Whatever you say — no matter how disbelieving or skeptical — Frank Schlier has probably heard it before. And anyway, the director of information systems for the American Bankers Association (ABA) thinks the results speak for themselves.

How did he do it? Schlier stepped away from his IBM mainframe Cobol and Fortran orientation seven years ago and adopted fourth-generation languages and relational techniques. Schlier's accomplishment is more impressive in light of the fact that his DP staff is small and light on heavy technical expertise. Only three of his people formerly worked in a systems capacity; the majority are MBAs or accountants.

The ABA is a \$50 million trade association to which 90% of U.S. banks belong. It provides its members with information services, handles government relations for them, runs 58 conferences and provides 4,000 products, such as books and cassettes. It also handles 890,000 student records

for the American Institute of Banking's education program.

When Schlier first joined ABA seven years ago, experts who were brought in to evaluate costs suggested that 60 to 75 people and one computer would be needed to handle all these tasks. "We took two computers and our staff on one side of the balance sheet. On the other side was the one computer and the staff the experts told us we need to do what we are doing. We end up way ahead," Schlier said in a recent interview, "even if we went to three computers."

He credits a software package called Oliver and a systems development method he is using for the success of his rather unusual department. His design methodology hinges on Oliver, a fourth-generation language developed in 1972 by the Pittsburgh, Pa.-based United Information Systems, Inc. and brought in-house by ABA in 1975.

Schlier's shop is running Oliver on Digital Equipment Corp. Decsystem-10 equipment under the Tops-10 operating system. Communicating with the DEC system and handling office automation and word processing applications are Datapoint Corp. systems tied together in a Datapoint Attached Resource Computer (ARC) network.

Explaining Oliver, Schlier said it lets you sit at a terminal and think

you are playing with a simple inquiry language, but it does everything Cobol does in the inquiry language level of difficulty. "With things like new reports, the user expectation becomes three hours instead of three weeks," he said.

Schlier compared Oliver with products such as Information Builders, Inc.'s Focus and Mathematica Products Group, Inc.'s Ransis, but noted the latter packages are just coming out with these capabilities, whereas Oliver has had them since 1972.

## Converted to Systems Model

Schlier's design methodology basically has converted the major functions of a business (buying resources, converting them into products or services and selling them) into a systems model. This includes people (customers or staff), institutions, the organization's own management structure, its activities and its stock.

"Then we use relational data sentences to tie that together," Schlier said. "What we have come up with is a model that we can give the systems designer — the basic framework that any system can be designed within."

Using this design method and Oliver, one of Schlier's staff members developed a credit card system that he said does the same things as Master Card, American Express and Visa in two months. "Before I came here, I worked for [Sperry Corp.] and Amtrak. This software is more complicated than anything I ever put in there," he said.

DP professionals who hear about Schlier's installation always ask about the efficiency of the fourth-generation software tools. "What we have found is we use more equipment to do what we are doing, but we use a heck of a lot less people and we also get a lot more out of those people," Schlier said. "The total dollars spent to provide information to the organization we feel is less."

## DPMA Meet Set for June 1-3

WILLIAMSBURG, Va. — The Data Processing Management Association's (DPMA) regional conference will be held here June 1-3 under the sponsorship of the Hampton Roads Chapter, which includes the South Central Atlantic states. The conference, whose theme is "Micros in a World of Mainframes," will include a vendor exposition and trade show and eight seminar speakers.

Heading the list of speakers is Joseph Deken, author of *The Electronic Cottage*; John Severin of the Navy Regional Data Automation Command and Bruce Spiro of the Defense Communications Agency will also speak.

A preregistration fee of \$95 for members and \$115 for nonmembers will be charged for the three-day conference, with further information available from Roger Higgs, Conference Chairman, DPMA Region 8 Conference, P.O. Box 9264, Hampton, Va. 23670.

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# Info Systems Designers Seen Economic Saviors

By Jake Kirchner

CW Washington Bureau  
WASHINGTON, D.C. — Information systems designers, as the architects of future corporate structure and survival, carry the responsibility for national economic prosperity, a Northern Telecom, Inc. executive said last week.

"Whether we like it or not, we are competing in an information race. The importance is such that the nation that leads or wins will be in a dominant economic position," Marcelo A. Gumucio, Northern Telecom executive vice-president for marketing, told the Associated Information Managers (AIM) last week.

Delivering the keynote address to AIM's annual meeting here, Gumucio

said, "It is only those who have the foresight and creative initiative to apply information technology who will emerge victorious. This applies both to business and other enterprises and to nations... The prize is nothing less than economic stability and prosperity."

According to the Northern Telecom executive, "the application of information technology will produce a tough, competitive international business arena in which only the lean, fit and fast will survive and prosper. The opportunity for aggressive and innovative action by information managers is enormous," but "in the application of existing technology, we are in our infancy."

This application challenge is "of

awesome dimension and awesome complexity," he said, citing three aspects of this complexity:

• Coping with technological change. "Obsolescence is... a constant threat to your investments in information systems," he observed.

• Coping with "the potentially bewildering array of suppliers and products. There is a chaotic situation, too, in the confusion of standards and protocols — many of them proprietary, designed to lock in the user to one supplier."

• Coping with change. "How," he asked, "can you plan for systems to accommodate needs that are not even foreseen now or a structure that is not even known yet?"

Gumucio suggested an approach

to systems development that incorporates what he called "the five Cs": continuity, compatibility, congeniality, control and cost-effectiveness. He outlined for his audience basic characteristics of these five attributes of successful systems:

• **Continuity.** "A rational approach dictates that an information management system must be able to evolve to accommodate new technology as it is introduced. You must be assured that your system will be able to accept new software and hardware and to incorporate new features. It must be an evolving, growing system with backward and forward compatibility of new developments."

• **Compatibility.** "The system should be able to accommodate virtually any make or type of equipment, regardless of protocol or manufacturer."

• **Congeniality.** "Let's face it," he said, "if a system or component of it is not easy to use and attractive to the user, it simply won't get used."

• **Control.** "Control must be in the hands of the user, not a supplier. You must be able to dictate the design and control the operation of your system, not become captive to your prime supplier. And — another aspect of control — you must also have the controls necessary to operate your system at peak efficiency."

• **Cost-effectiveness.** "This is the bottom-line criterion," according to Gumucio. "If a system is not cost-effective, it will never be acceptable. And cost-effectiveness must include not only the cost implications of the system itself, but also the more effective performance and the greater productivity of your people as they use and communicate information more efficiently."

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## AIM Award Goes To Texaco Exec

WASHINGTON, D.C. — Raul E. Dubreuil, manager of information services for Texaco, Inc., last week received the 1983 Outstanding Information Manager Award. The prize is given annually by the Associated Information Managers (AIM).

Dubreuil, who has been with Texaco since 1967, was cited for "excellence in concept, development, design, implementation and management of Texaco's information center concept — an integrated, automated, corporatewide system including records management, library operation, word and data processing, micrographics and telecommunications."

AIM's 1983 Outstanding Information Product Award went to American Banker, Inc. and Bank Administration Institute for a joint venture called Innetline. The product was described as the banking industry's first computer-based information network.

AgriStar from Agridata Resources, Inc. and Knowledge Index from Dialog Information Services, Inc. were runners-up for the product award.

The annual award for outstanding technology went to Cincom Systems, Inc. for its TIS data base system.



## Despite Data Flow Restriction Woes U.S. Firms Seen Lax in Data Privacy

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — The majority of American firms contacted recently in a transborder data flow study have done little more than pay lip service to the need to protect personal data privacy, the study's director said last week.

This is extremely shortsighted for multinational corporations worried about possible data flow restrictions, according to Therese R. Revesz, managing editor of "Business International," a weekly newsletter. She said these firms should initiate aggressive campaigns to comply with national data protection laws.

Companies generally are aware that almost two-dozen nations have passed or are working on data protection laws and that a soon-to-be-ratified European treaty might restrict data transfers to the U.S., but few companies are taking the available steps to protect themselves in this new environment, Revesz said.

"Business International" interviewed almost 90 multinational corporations, headquartered in nine countries, in its study aimed at developing corporate responses to data flow restrictions. Revesz told the annual meeting of the Associated Information Managers on May 3 that European data protection authorities are correct in believing few U.S. firms are serious about personal data

### Compliance Program Cited as Way To Protect International Operations

WASHINGTON, D.C. — Companies can best protect their international operations against data flow restrictions by enacting positive programs to comply with data protection laws and regulations, according to Therese R. Revesz, director of the data flow study recently undertaken by "Business International."

Using the Bank of America's compliance program as a model, Revesz suggested the following steps for a corporate compliance program:

- Publicize endorsement of the Organization for Economic Cooperation and Development privacy guidelines, especially in annual company reports — a step, she said, that European data protection authorities are seeking.
- Review company operations against data protection laws.
- Work with national data authorities in the countries where

the firm operates to develop proper compliance mechanisms. For the time being, she reported, those authorities are being reasonable and helpful.

- Develop a corporate privacy code on an international basis.

- Disseminate within the organization a data protection compliance manual.

- Produce a brochure for the public outlining compliance actions.

- Consider signing contracts with overseas subsidiaries that bind the company to personal data protection equivalent to that expected in their countries.

- Designate compliance officers in each country.

- Most important, firms should let data protection authorities know about these compliance efforts. This will help in getting licenses to maintain vital corporate information practices.

protection.

Of 51 U.S. firms contacted in the survey, she said, 34 have publicly endorsed a set of voluntary privacy pro-

tection guidelines developed by the Organization for Economic Cooperation and Development (OECD) and supported by the U.S. government. But, she said, "only 10 [of the 34] have taken any steps to implement them here or overseas."

Worse, only seven executives interviewed even knew their firms had endorsed the guidelines, and three actually strongly denied that their firms had done so, Revesz said.

Because the U.S. will not join the Council of Europe data protection treaty, expected to go into force later this year, the American government has placed great emphasis on the OECD guidelines, hoping a strong U.S. endorsement campaign will persuade European data protection authorities that American firms' privacy protection actions are as strong as those mandated in the Council of Europe treaty [CW, Feb. 28].

Revesz said the lukewarm guidelines implementation reinforces the skepticism of those authorities who already feel the guidelines are not sufficient because they are voluntary and in some cases little more than a public relations mechanism for many American firms.

She also reminded her audience that there are other threats to data flow in the works. She noted that many countries overseas are trying to restrict use of private leased lines and force companies to use more expensive public networks. Also, she pointed out that nations may try to restrict data flow outside the country to preserve local employment, bolster revenues and guard against any national vulnerability that might result from having to rely on foreign providers of data processing services and products.

Revesz said many companies may be violating national data protection laws without knowing it because

(Continued on Page 14)

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## 'Chances Are It's Not Evident'

# Warning Issued on DP-End User Collusion

By Bob Johnson

CW New York Bureau — If a senior computer operator earning \$20,000 a year suddenly begins driving a Mercedes Benz and taking frequent trips to Las Vegas, should you suspect you are harboring a computer criminal?

Yes, according to Stanley D. Halper, director of data processing audit operations for Coopers & Lybrand here, who said a dramatic change in life-style may be a tipoff that a DP specialist is involved in some kind of computer abuse, either by himself or in collusion with an end user.

Interviewed at a recent seminar here on computer crime sponsored by Law & Business, Inc., Halper said that because the computer environment has moved from batch systems to more on-line processing, would-be end-user computer criminals now need the assistance of DP personnel.

"If there is in fact a collusive arrangement going on between a DP person and the user, the chances are that it is not evident," Halper pointed out. "In the theft of money, for example, there are many administrative checks that

are usually in place. Essentially, the biggest clues the DP person has are changes in the habits and attitudes of key computer employees. When a DP manager notices some radical differences, although they may not always mean something wrong is taking place, he should nevertheless keep his eyes open."

Because processing has become increasingly complex, it very often takes a DP-generated "computer action" to get access to sensitive program libraries. Users with larceny on their minds must go through the data center to get past safety measures such as software security controls, passwords and printout checks, Halper noted.

"We are at a point where [end users] realize that it takes the collusive effort of a DP person to initiate a crime. Say that a user sees a system's weaknesses from a remote site, and he wants to put something up on a data base or library for his own use. He can't do it without the assistance of a programmer or someone who has direct access to the system and can get by its security."

The auditor urged DP managers who suspect an employee of computer abuse

to take the most cautious action possible so as not to create an embarrassing or legally complicated situation. He advised DP executives to sit down with the auditing staff, the security staff and computer operations people to discuss the suspect's actions or the suspected crime.

Halper offered the following scenario to illustrate how a DP manager should proceed with the investigation of a suspected employee. "The DP manager sees something fishy going on with the payroll processing in his shop. First, he should check his own security controls, like [system management facility] reports. Very often, the DP department will take it for granted that all of its controls are in place, when in fact they are not being exercised."

"The next thing for the DP person to do is to be familiar with what the payroll department is getting from DP in terms of a checklist or report. This may include things other than the normal 'exceptions' list. He should then ask payroll if they were in fact checking these lists."

"Finally, sit down with the internal audit people and see if they are satisfied with

internal audit controls; in the case of a payroll system, [determine] if the bank reconciliations were OK," Halper said.

If everything checks out, the DP manager may then want to approach the suspect and ask him to meet with the company's human resource

division. But "this is where it really gets tricky," Halper said. "You have to sit down with the guy and try to get a feeling of what's going on. It just may be a legitimate thing that he is doing, or the change in his life-style may be the result of an inheritance."

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## McGill to Keynote WIP Meet

NEW YORK — Archie McGill, president of American Bell, Inc., will deliver the keynote address at a conference at the Summit Hotel here May 17 sponsored by Women in Information Processing.

At "A Perspective: American Bell," McGill will discuss the underlying technology, changing markets and business pressures that shape the information processing and communications environments. McGill will also address

the question of how Advanced Information Systems will fit into this changing environment following the reorganization of AT&T.

The conference registration fee is \$15 for members

and \$30 for nonmembers.

Additional information on the conference is available from Susan Thomas, Women in Information Processing, Box 39173, Washington, D.C. 20016.

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## U.S. Firms Called Lax

(Continued from Page 13)  
their employees are ignorant of the laws' provisions. This opens the firms up to selective enforcement in that the laws could be used to punish firms for other, unrelated activities, she said.

The problem will only get worse, she added, now that corporate departments are using personal computers whose operations, which are often outside the control of company headquarters, could be in technical violation of data protection laws if the data carries personal identifiers.

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# Programmer/Analyst Loots Rehab Fund For \$17,000 He Was Entrusted to Protect

By Jeffrey Beeler

CW West Coast Bureau

OLYMPIA, Wash. — A programmer/analyst working for the state of Washington has pleaded guilty, to stealing almost \$17,000 from a government system whose security he was entrusted with protecting.

More than \$15,000 of the loot that Stanley Slyngstad swiped during 10 months of illicit systems tampering apparently went to pay for drinks at a local watering hole known as Charlie's Tavern. Slyngstad, 44, seems to have been a regular at Charlie's, where he often bought drinks not only for himself, but for many of his companions as well, according to State Patrol Lt. Fred Pilon.

The remaining \$1,800 of the stolen state money eventually found its way into the hands of three of Slyngstad's acquaintances, all of whom were apparently in dire need of financial aid, Pilon said.

Although Slyngstad's efforts to give to the poor by stealing from the government have earned him a reputation as a latter-day Robin Hood, state authorities have rejected the comparison as inappropriate. "Slyngstad is definitely not Robin Hood," maintained Les James, director of the state Division of Vocational Rehabilitation (DVR).

"The money that he stole to buy drinks at a local bar came from a fund that was designed to train the handi-

capped for new careers and put them back to work. Taking money from disabled people and spending it on alcohol is not my idea of Robin Hood."

Before he was arrested and lost his job on March 11, Slyngstad worked for the DVR, where he designed some of the security software aimed at protecting the agency's funds from theft, James said.

Part of the programmer/analyst's job was to develop safeguards to prevent vocational counselors and data entry operators out in the field from gaining unauthorized access to the state's systems.

## An Unauthorized Program

Early last year, Slyngstad apparently wrote an unauthorized program that allowed him to issue state checks for fictitious claims. The program, whose existence has long been suspected, but has yet to be confirmed, was also apparently designed to erase automatically all evidence of Slyngstad's illegal transactions from the system's files, according to James.

Between April 1982 and last February, the programmer/analyst used his special program to generate 25 phony state checks worth a total of \$16,923, Pilon maintained. Twenty-two of the checks were made payable to Slyngstad himself and were mailed to his home address here.

Of the three remaining checks,

one went to one of Slyngstad's drinking buddies, who used the windfall to make the down payment on a pickup truck he desperately needed for his job, James said.

Blame for the thefts from the state's Sperry Corp. 1100/83-based system can be traced at least partly to the DVR's failure to monitor Slyngstad's activities with sufficient care, Pilon said. Although Slyngstad occupied a highly sensitive position with free access to literally millions of dollars in state funds, no one in the DVR was systematically supervising his actions to make sure he did his job honestly, Pilon said. The result was that the programmer/analyst was apparently able to go to his office during weekends, when his co-workers were off duty, and use the state system for unauthorized purposes.

## Needed a Watchdog

Pilon's observations about the reported holes in the state's systems security were echoed by James. "Stan himself said afterwards that what we needed was to have someone looking over his shoulder," James said. "So to that extent, we [in the DVR] are probably culpable [for the thefts from the state system]."

On the other hand, he added, the DVR's failure to appoint a watchdog for Slyngstad is at least partly understandable. "Obviously, you wouldn't assume that the writer of your security program was going to steal from you," James said. "But the sad fact of the matter is that if a person is able to program, he's also able to steal from you, and there's not an awful lot you can do to stop him."

During the roughly two months since Slyngstad's arrest and dismissal, DVR officials have "changed the location of certain things in our office to make certain ... Slyngstad couldn't return and find his way around easily," James said.

The discovery of Slyngstad's financial misdeeds occurred by accident. An accountant was routinely examining one of the DVR's "remittance advices," which provide a record of all the agency's check authorizations, when he noticed that the address on the document was identical to Slyngstad's.

Suspicious, the officials checked their systems files for evidence of wrongdoing, but at first found nothing amiss. Not until they exhaustively examined huge numbers of remittance advices were they finally able to find any phony checks, most of which had been written to Stan Slyngstad, James said.

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# Users Group Criticizes FCC Plan for Detariffing

By Phil Hirsch

CW Washington Bureau  
WASHINGTON, D.C. — The Federal Communications Commission's (FCC) plan for detariffing telephone company-provided terminal equipment now installed on customer premises was sharply criticized last week by a spokesman for the International Communications Association (ICA), a users group composed of the nation's largest corporations. The criticism came shortly after two FCC commissioners said they are unhappy with the tentatively approved scheme.

The commission late last month asked for public comment on the detariffing plan — suggested almost entirely by AT&T — whose major

provisions include:

- All embedded (already installed) terminals would be detariffed next Jan. 1.
- When detariffed, these terminals — often referred to as customer premises equipment — would be offered for sale, but only if American Bell, Inc. AT&T's terminal marketing subsidiary, offers the same type of equipment new.

- The above restriction would end in 1986, at which time "virtually all" Bell-manufactured customer premises equipment (CPE) would be offered for sale.

- For 18 months after Jan. 1, 1984, rental rates for embedded Bell customer premises equipment would be frozen. National rates for private branch exchange

(PBX), key and single-line customer premises equipment could not exceed the highest rate currently allowed under tariff. The specific prices would be announced within three months after the FCC approved a detariffing plan.

## Plan Contested

ICA attorney Brian Moir contended that the plan "fails to give users adequate price protection. Prices are controlled for only 18 months, after which [American Bell] can charge whatever the market will bear. In some cases, a user will be able to escape steeply higher rental by buying his equipment, but not in others, since the plan provides that all embedded equipment will

not be offered for sale until 1986. Note that the price freeze would end in June '85."

Moir said it is "unclear" why PBX and telephone terminal prices are being limited to the highest rather than the average present tariff rate. He also said that the FCC would be in a much better bargaining position if it required the phone company to announce its initial prices for embedded customer premises equipment before rather than after the commission adopts a final plan.

At the commission's April 27 meeting where the AT&T-augmented plan was "tentatively" favored, according to an FCC press release, Commissioner Henry Rivera questioned the idea of allow-

ing American Bell to buy the Bell operating companies' installed terminal base at adjusted net book value, which a number of critics contend is less than its true market value. Commissioner Mini Weyforth Dawson thought the embedded base should remain tariffed until it is fully depreciated because, according to an aide, the proposed detariffing plan will, rather than promote competition, enable American Bell to inherit the Bell operating companies' dominant position in the terminal market.

Rivera's and Dawson's objections could be significant. By the end of next month, the present seven-member FCC will be reduced to four commissioners, among them Dawson and Rivera.

## Datacomm Briefs

### FCC Asked to Decide On Interstate Cable

By Phil Hirsch

CW Washington Bureau  
WASHINGTON, D.C. — Cox Cable Communications, Inc. has asked the Federal Communications Commission (FCC) to assert federal jurisdiction over cable television facilities that carry interstate communications traffic. The move came shortly after the Nebraska Public Service Commission decided that a Cox-owned cable TV system in Omaha, Neb., now being used by MCI Telecommunications Corp. to bypass the local telephone network, is subject to state regulation.

Cox is seeking a federal

court order that would prevent the Nebraska commission from carrying out that decision.

Meanwhile, legislation requiring partial federal regulation of cable TV channels was awaiting action on the floor of the U.S. Senate last week. The bill would regulate channels used for basic telephone service but not other services.

Telephone carriers, led by AT&T, are opposing this arrangement because they fear it would encourage private-line users to bypass local telephone company facilities. If cable TV operators offer unregulated, private-line service, they allegedly would be able to charge sig-

nificantly less than local telephone companies.

### AT&T to Launch Telstar 3 Satellite

WASHINGTON, D.C. — AT&T will launch a communications satellite July 28, assuming the Federal Communications Commission does not object, and wideband data transmission will be one application.

The satellite, dubbed Telstar 3, will have a life of 10 years, three more than those now in use, a telephone company spokeswoman said. Transmissions will flow through each of Telstar 3's 24 transponders at 60M bit/sec.

However, "it's hard to say" whether Telstar 3 will produce lower costs, the spokeswoman said.

The July 28 launch will add a fourth satellite to the three AT&T currently leases from Comsat General Corp. Beginning next year, the phone company plans to replace the leased facilities by launching additional Telstars.

### FCC Gives OK to 10 To Launch Satellites

WASHINGTON, D.C. — The Federal Communications Commission (FCC) has authorized 10 companies to launch 19 communications satellites during the next four years.

Three firms — AT&T (see story above), RCA American Communications Co. and Western Union Telegraph Co. — plan launches this year.

Among the others are American Satellite Corp., Hughes Communications, Inc., Satellite Business Systems and Southern Pacific

Satellite Co.

### Southern Bell LADTS Gets Florida Nod

WASHINGTON, D.C. — IBM and GTE Telenet, Inc. were reportedly reviewing their options last week after the Florida Public Service Commission said Southern Bell Telephone Co. could make Local Area Data Transport Service (LADTS) available for a much-heralded videotex service in the Miami area next fall.

LADTS, developed by AT&T, is a scheme for transmitting voice and digital data simultaneously over existing analog loop loops. A major component of the embryonic integrated services digital network (ISDN) that AT&T has begun deploying throughout the country, it will support home- and business-oriented information services.

Southern Bell was the first telephone operating company to file an LADTS tariff. In granting the tariff, the Florida Public Service Commission overruled its own staff as well as IBM and GTE, all of whom said implementation of the tariff should be deferred and investigated.

IBM and GTE contended that under the Federal Communications Commission's (FCC) Second Computer Inquiry Decision, the Southern Bell tariff may be illegal because it includes protocol conversion. The question of whether this makes the service "enhanced" and thus not allowed to be offered by a Bell operating company is being debated at the FCC.

The Florida commission's order lets Southern Bell provide LADTS only to View-

data Corp. of America, the company that plans to launch videotex service in Miami next fall. Before serving additional customers, the phone company will have to provide "appropriate" cost data, the commission added.

### AT&T Announces Satellite Service

WASHINGTON, D.C. — Satellite Digital Circuits (SDC), a "more versatile and widely available" high-capacity satellite transmission service, was unveiled by AT&T late last month. If authorized by the Federal Communications Commission, it will begin operation June 11.

The service consists of 1.5M bit/sec dedicated channels through which users could transmit a mix of voice, video and data on a point-to-multipoint basis. Likely applications, according to the telephone company, include video teleconferencing and computer-to-computer bulk data transfer.

Each channel is priced at \$9,000/mo. The first transmit/receive earth station, if shared, would cost \$3,500/mo plus \$2,000 for installation. Transmit or receive facilities are less as an additional earth stations.

Dedicated earth stations, offering one to eight channels, would be available at \$12,600 to \$14,750/mo plus \$9,800 for installation.

SDC is the latest in a family of high-capacity transmission services to be offered by AT&T. The others are a land-based private line offering called Terrestrial Digital Circuits and a switched version called High-Speed Switched Digital Service — which can be either terrestrial or satellite circuit-based.

## A Shirt-Pocket Alternative to the Desktop Terminal.

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revolutionary G.R. Electronics PDA. The ultra, solid-state terminal has a 40-key, positive-click-response keyboard. From its 32-character internal memory it displays eight bright 16-segment LED characters through a one-line window.

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# Scholars Warn Survival of USPS Depends On Freedom to Compete in New Services

By Phil Hirsch

WASHINGTON, D.C. — "If the U.S. Postal Service [USPS] is to survive... it must be given the freedom to compete in telecommunications services."

Joel L. Fleishman, vice-chancellor of Duke University, made that statement after he and several other scholars spent two years studying Postal Service operations.

Their 300-page analysis of the situation, entitled "The Future of the Postal Service," was released here late last month by the Aspen Institute, a public policy think tank that cosponsored the project along with USPS and Harvard and Duke universities.

## 'Impact May Be Large'

"While experts may argue infinitely about the extent to which electronic communications technology will divert revenues from the first-class mail stream, no one can deny that... its impact may be quite large," wrote Fleishman, the book's editor. "Given the extent to which potentially diverting technology is already being widely used, it requires little imagination... to anticipate substantial consequences for the postal service."

As examples of "potentially diverting technology," Fleishman cited "electronic message systems

within large corporations, telephone- and television-compatible terminals, both in business and in homes, and bank cards that make charges directly against checking accounts."

If competing electronic message systems capture 5% to 25% of current first-class mail, which Fleishman believes will occur, "first-class mail rates could easily double even if other factors are ignored," he said.

Among these "other factors" is the financial condition of the postal service. "In 1970, USPS had a \$2 billion equity; by 1980, despite a \$1 billion contribution voted by Congress, this positive balance had become a \$3.6 billion deficit," Fleishman noted. The change was largely due to rising labor costs, he contended, pointing out that "compared to other government employees of comparable duties and level, postal workers have fared approximately twice as well."

To maintain "present uneconomic

levels of service without continuously increasing postal debt will inevitably require more revenues," he said, adding that allowing the Postal Service to offer additional on-line message services "could reduce this problem significantly."

However, before unleashing the Postal Service, the Private Express Statutes, which make USPS the exclusive distributor of first-class mail, must be repealed, according to Fleishman. Otherwise, he contended, the Postal Service could raise its letter mail rates above costs and use the excess to underprice its competitive electronic mail offerings.

Fleishman also called for abolition of the U.S. Postal Rate Commission, the agency that reviews all postal rate and service changes. Since commission proceedings take several months, Fleishman said, USPS competitors could use it to hobble the Postal Service's electronic mail offerings.

## National Data Systems Forum Releases Conference Proceedings

WASHINGTON, D.C. — The proceedings of the 14th National Data Systems Forum, sponsored by the Transportation Data Coordinating Committee (TDCC) and featuring "The World of Electronic Data Inter-

change," have been released. This publication includes presentations at the TDCC Forum by spokesmen in the business systems modernization and automation community.

TDCC Forum proceedings reportedly serve as a library and reference source for the latest developments in the area of intercompany computer-to-computer interchange of administrative and operational transaction data formerly accomplished by paper documents.

Panel presentations from 16 technical clinics are outlined in the proceedings. Speakers whose presentations are featured include Lewis H. Young, editor in chief, *Business Week*; Charles Marshall, AT&T executive vice-president; Harry B. DeMaio, corporate director of data security for IBM; and John L. Kirkley, editor, *Data Automation*.

Forum attendees will receive a complimentary copy. It is available to others for \$20 from TDCC headquarters, 1101 17th St. N.W., Washington, D.C. 20036.

## Survey Addresses Office Automation

BAD HOMBURG, West Germany — H.F. Sherwood & Associates has announced Survey Report IV of its Information Technology Service, which focuses on office automation.

The study concludes that office automation functions should be considered in conjunction with the data processing and communications functions of the company, the vendor said.

The study, a follow-up survey of a 1976 poll of 17 U.S. companies, includes case studies and lists each firm's biggest office automation problems, major lessons learned and what they would do differently.

The report costs \$100. H.F. Sherwood & Associates can be reached through P.O. Box 2316, Bad Homburg, West Germany.

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## Despite Its Larger Share of DP Budget Study Finds Data Entry Salaries Up 6.5% in '82

By Ed Scannell  
CW Staff

STAMFORD, Conn. — While salaries for data entry operators rose only 6.5% in the past year compared with 1981's 12% increase, data entry is accounting for a larger share of the total data processing budget.

This was one of the findings of a recently completed

survey released by the Data Entry Management Association (Dema).

The firm's fourth annual survey was based on responses from 153 data entry companies in the U.S. and Canada, 59% of which had annual revenues in excess of \$50 million.

The survey attributed the low salary increases to the

protracted recession. The still sluggish economy is expected to keep the cap on data entry salaries over the course of 1983, and the survey predicted a 6.68% increase for the upcoming year.

### Overall Picture

At the same time, the data entry portion of the overall

data processing operating budget grew, on an average, from 19.11% in 1981 to 26.79% in 1982.

A Dema spokesman was not sure to which factors he could attribute the 7.88% increase in most data entry budgets.

However, the spokesman theorized that it might be an indication that data entry

firms "now running lean and mean" are anticipating a solid economic recovery over the next year.

Although the recession has had a largely negative impact on the data entry business over the past year, in some regards it has also proved beneficial.

Because of the recession, operators tend to stay at one job longer and work harder to keep that job, the Dema spokesman said.

This tendency is reflected in the turnover rate among U.S. and Canadian data entry firms, which was more than cut in half compared with the previous year's totals, going from 13.8% to 6.84%. The rate of absenteeism also dropped from 6.94% to 5.56%, he said.

The improved turnover rate and lower rate of absenteeism are perhaps two of the reasons why the average number of keystrokes per operator per hour has increased for the fourth straight year, a Dema spokesman said.

Keystrokes per hour per operator rose 3% in 1982, going from 11,106 to 11,435.

In addition, the number of data entry facilities breaking the 15,000 keystrokes per hour doubled from 3% to 6%, according to the survey.

For the first time in the survey's four-year history, data entry managers were asked if they thought their operators were very happy, somewhat happy, indifferent or unhappy with their positions.

### 'Somewhat Happy'

The figures showed that 27.4% said their operators were very happy; 61% of the managers thought their operators were somewhat happy; 9.6% said their operators were indifferent; and 1.3%, or just two of the managers surveyed, thought their operators were unhappy.

Other statistics from the survey showed that the average effectiveness cost of data entry operators is \$18.11 per hour.

This figure represents the costs to the facility of using a typical operator for one hour and does not include the cost of rent, electricity and other overhead, the survey said.

There was an increase in incentive systems for operators last year, but a decrease in the use of flex-time schedules as well as a drop in the number of shops offering four-day and three-day work weeks.

Dema can be reached through P.O. Box 3231, Stamford, Conn. 06905.

## "Hyatt was a pioneer of local area networks. When Datapoint introduced the first one, we ordered."

—Bob Regan

V.P. Management Information Systems  
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"One reason the ARC network has been so effective for Hyatt is because it's easy to expand," says Regan. "Hyatt has had phenomenal growth, and the ARC has kept up. When more people needed the system to do more work, we simply added to the network."

The ARC local area network can be expanded virtually without limit by simply plugging in additional Datapoint processors, printers, storage disks, and terminals. Each new processor adds power to the

network so new users get the same fast response the original users were getting. Companies can closely match the power of an ARC system to their needs, expanding in small, inexpensive increments instead of buying "more computer than they need" in order to have room for growth.

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No matter how far an ARC system is expanded, all the users can have access to all the data except where security precautions are installed. So even though more and more people are using more and more computers, there's never a

need to duplicate files.

"At present, Hyatt operates forty-five ARC systems," Regan says. "Others are in the planning stages right now. On the operations side we use them for accounting, reservations, and group sales. At Corporate we use them for accounting and for systems development. Obviously, we depend on them heavily. They're like the meters where we check our own financial performance. They simply have to work. And they do."

"Hyatt has stayed with the ARC system because it's been cost-effective. That's the bottom line. I can recommend a certain system to a hotel, but in the end, the system has to sell itself. And keep selling itself after it's installed. Our Datapoint ARC systems have done that."

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# DATA POINT

# Pressure on Storage Researchers Mounting

By Tom Henkel  
CW Staff

The proliferation of microcomputers and demands from large computer users for higher capacity tape and disk drives has spawned a sort of memory mania among recording technology researchers.

Increased user demand for all forms of data storage is putting pressure on manufacturers to develop faster, smaller and cheaper storage devices.

According to a Cleveland-based market research firm, Predicasts, Inc., domestic sales of memory products will top \$5 billion by 1985 and \$28 billion by 1995. Predicasts further noted that within two years, the market for memory products will have undergone a complete reversal from being driven by large-scale, high-performance disk drives for mainframes to producing floppy and microfloppy diskettes for microcomputers.

The booming demand for memory products is putting pressure on memory researchers for technological breakthroughs. Researchers agree that improvements in existing longitudinal magnetic storage technologies are necessary to keep users happy until newer technologies, like vertical magnetic recording and optical recording, become inexpensive and efficient enough to make strong inroads on the currently magnetic-dominated world.

## Only Half the Battle

But according to at least one researcher, Dr. Mark Kryder with Carnegie-Mellon University's Magnetism Research Center in Pittsburgh, Pa., coming up with better techniques for storing information is only half the battle. Kryder noted that even with new recording technologies, tape drives and disk drives are still electromechanical devices. That means parts will wear out. In addition, the possibility of mechanical failure increases as parts become smaller and are subjected to increased stress.

"The mechanical part is just as big as the magnetic part," Kryder said, noting that some magnetic media will wear out within minutes if the mechanical parts of a machine are not designed properly. But Kryder is confident that engineers will be able to design faster and more accurate mechanical components to support improved storage techniques.

While different recording techniques such as optical and vertical technologies may hold promise for the future, he felt strong advances are possible in longitudinal techniques in the near future. Recording densities of 16M bit/in. are "very doable" in the 1984-85 time frame, he said. Longitudinal techniques can be developed to handle bit densities of 50M bit/in. or higher.

"It's nice to have new techniques," Kryder said, "but there won't be a sudden switch." The thin film head technology popularized by IBM will probably be the staple technology of large-capacity disk drives for at least the near future, he said.

Perpendicular recording shows potential for larger recording densities, but there are still problems with the technology, such as a require-

ment that the read/write head must fly closer to the recording media, which causes the media to wear out faster, according to Kryder.

Optical recording, which received much attention from technical gurus as a possible alternative to magnetic storage, will take some time to make its mark on data processing. According to W. John Tomlinson, supervisor of the Optical Disk Recording Group at Bell Laboratories, the first uses of optical recording will be as replacements to reel-to-reel tape drives.

The current drawback to optical recording is that it cannot be easily erased. While some researchers are working to perfect an erasable technique, Tomlinson predicted that it

will take several years to develop an erasable optical device. Even with the erasability question answered, Tomlinson said that optical access times must be improved to compete with magnetic technologies. There is a potential bottleneck in an optical storage system if a lot of users attempt to access small amounts of information at the same time.

Don Simon, a principal researcher with PA International Management Consultants, Inc., noted that declining costs for magnetic media storage devices may stunt the growth of optical devices.

Burnhams Corp. recently scrapped an active development project to build an optical disk product. A spokesman said the firm felt it

would not be cost-effective to market an optical disk at this time. Burnhams still plans to research optical technologies, however.

Where optical shines, Simon said, is in applications that today use microfilm — namely low-cost replication of material which is used for a while and then discarded.

But in terms of competing with magnetic data storage, Simon felt optical recording might have a little impact on magnetic data storage devices as bubble memories. Several years ago, bubble memories were touted as a possible alternative to magnetic storage. However, both Kryder and Simon noted that declining costs in magnetic media dimmed early hopes for bubble memories.

# Hitachi takes a big stride toward the smaller footprint.



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# Shift From Doing to Managing Seen Critical

By Marguerite Zientara

CW Staff

BOSTON — The key issue in effective leadership is making the move from doing to managing, with the balance shifting in direct proportion to how high up the management ranks one goes.

So said Edward Kappus, president of Management Strategies International Corp. in Trumbull, Conn., when he addressed the question of "Are You an Effective Leader?" at the Association for Systems Management's annual conference here recently.

While "doing" deals with tactics and efficiency, or "doing things right," Kappus explained, "managing" deals with strategy and effectiveness, or "doing the right things."

Thus, a manager should give up doing certain things as he rises in the corporate hierarchy "to make way for higher leverage things to get involved in," according to Kappus.

One way to judge whether you are doing this, he said, is to ask yourself: "If we weren't doing this today, would we begin doing it?"

## Instilling Motivation

One of the tasks commonly regarded as central to leadership is instilling motivation in subordinates. But "you can't motivate anyone," Kappus contended. "All you can be is an environmental engineer to create an atmosphere where individuals motivate themselves," he explained.

If it is true that managers cannot motivate anyone and that people do things for their own reasons, not management's, then the manager must identify his employees' reasons.

"The single thing more than anything else that a person needs in order to be motivated is a sense of achievement," Kappus said. Toward that end, "honest, timely and appropriate recognition" must be given, lest the manager blunt the sense of achievement and thereby lose its motivational effect.

"Don't wait for the great month-end or year-end achievements," he advised. "You must recognize the day-to-day achievements, and that increases the odds that they'll recur."

Coaching is another way to inspire motivation. "You need a skill development plan for everyone who works for you, identifying two things you and the employee are working together to develop in the next year," Kappus recommended.

"Delegation is the single

most important management skill you need to get better at," he said, noting that it has "the most potential for the worker and employee to have a win-win situation."

Besides giving a subordinate the responsibility for an end result, a manager must also give him the authority to determine how to achieve the end result — and resist the temptation to tell him how to do it.

"That's a scary part," Kappus admitted, "because you're putting a piece of your career on the line."

On the other hand, a manager does not want to abdicate all responsibility totally, he emphasized. "People respond to inspection points along the way."

In some cases a checkpoint will be once a month, and in other cases, "you start getting nervous after one or two

hours," he said.

At the start of a new manager-subordinate relationship, the manager should communicate his expectations, indicate how he will measure success or failure, encourage the participation of the subordinate in setting goals and prioritize tasks.

The manager should also set up appropriate checkpoints based on the worker's experience and competence

and indicate each task's degree of difficulty.

"The subordinate wants to know whether success means just that he will keep his job or that every time he comes in the room you'll stand up and applaud," according to Kappus.

At the end of a project period, the manager must give feedback, evaluation and a differential reward, Kappus recommended.





# Systems Planning Method Outlined

By Marguerite Zientara

CW Staff

**BOSTON** — The difference between a successful and an unsuccessful system implementation often hinges on planning, which can save time and money by solving potential problems before they occur.

A systems planning methodology was presented here recently by the person who made that observation, Dom-

inic Mezzanotte, assistant director of Systems Planning for Baltimore-based Chessie System, Inc.

Speaking at a session on "Systems Planning: The Neglected Discipline" at the Association for Systems Management's annual conference, Mezzanotte said that "the development of an information system, regardless of size and complexity, requires the planning,

organizing, coordinating, control and direction of many activities.

"All projects should be divided into tasks," he advised, "the completion of which indicates milestones of progress."

The five steps to project management, Mezzanotte said, are: (1) definition and analysis of the problem and business requirements, (2) definition of the functional

requirements for the system, (3) system design and user acceptance, (4) implementing the system solution and (5) installation follow-up and post-conversion evaluation.

One of the major factors in the success of a system is "how well the lines of communication among involved parties have been set up," he stressed. From the project leader, there should be open communication to and from

MIS management, the systems group, technical support people, the data base administrator and user departments.

A proven vehicle for such communication, according to Mezzanotte, is a project working group usually made up of systems staff personnel, technical staff personnel, user group personnel and sometimes outside hardware/software personnel. "The meetings should not be used as the vehicle to design the system," he cautioned, but rather to compare projected and actual timeframes, costs and product quality.

As part of Step One — the definition and analysis of the problem and business requirements — it is of key importance to establish system boundaries, "even though you might not be the most popular person for doing it," Mezzanotte said. "You have to be hardheaded about that."

A failure to do so can result in time and cost overruns, "in that additional tasks and requirements are allowed into the project with no provision made for redefining project plans, schedules and time and cost estimates."

Step Two — definition of the functional requirements for the system — will result in a proposal that is "a concise and thorough model of the system," Mezzanotte said.

Step Three — system design and user acceptance — means "you can now develop a very detailed plan, identifying all or most manpower and material needs and costs, privacy and security needs and lead times needed for equipment delivery."

In implementing Step Four, the system solution, "a great deal of coordination is necessary to ensure everything is ready on the system implementation or 'target' date," he said.

Step Five — post-conversion evaluation — is "not done often enough," Mezzanotte noted. A report should be written that indicates whether the system meets the basic requirements and operates within stated boundaries.



Chris Poulos by M. Zientara  
Dominic Mezzanotte

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# Communication Said Key to Effective Info Center

By Lois Paul

CW Staff  
ANN ARBOR, Mich. — "To have an effective information center, you need good hardware, good software, a good support staff — and you have to communicate, communicate, communicate."

This advice was offered by James W. Johnson, vice-president and innovation officer for The Equitable Life Assur-

ance Society of the U.S., to attendees at The Conference on Information Centers and Fourth-Generation Languages, held here recently by the University of Michigan and Database Design, Inc.

The most important component of the information center — the facility set up within a DP department to train and encourage end users to do their own comput-

ing — is the "spear carriers," Johnson said. These are the people who set up the database and take extracts from it for the end users.

"The fundamental problem in using this kind of facility is the problem with ex-cuses using the data," he said, because they do not understand the terminology and have difficulty visualizing the data base concept. "I have come to believe it is the

people who now do the selection for them — their staff — who will be the primary users."

The Equitable's information center is using Information Builders, Inc.'s Focus as its fourth-generation language, as well as SAS Institute, Inc.'s SAS statistical analysis package. Johnson's group has developed a programmer's workbench that functions as a common win-

dow to its major applications — the financial information system (FIS) and personnel management information systems (PMIS). Both systems are based on applications software packages that run on IBM VM systems under CICS.

In addition, the group developed a procedure for cataloging reports, prompts for generation of reports and graphics and a front end for beginning users of the Focus language.

The lessons The Equitable has learned regarding information centers to date, according to Johnson, are:

- There must be a common architectural framework for all applications, such as The Equitable's programmer's workbench.
- The service orientation is crucial.
- There is a need to "innovate in the context of a business need."
- The information center requires a separate organization.
- Significant technical support is needed for a successful information center, Johnson said, noting that his facility ran ahead of its support.
- End-user computing must be marketed.
- Performance issues require attention.
- There is a significant demand for executive decision support that is not being met.

"True user friendliness is very difficult to achieve," Johnson said. However, his executive users are responding in quite different ways to use of the information center. One executive used the center's tools and data to develop a five-year forecast for a subsidiary. His experience apparently was a good one because he brought his findings to his staff afterward, along with a series of questions.

"Others look like you offered them raw kangaroo meat for lunch," Johnson said.

After his group gave 75 demonstrations of the information center's capabilities, Johnson said the immediate reaction was "This would be great for group insurance." A prototype of an underwriter experience ledger was put up in three weeks using the programmer's workbench. The system has been operational and still is running under Focus.

"The large files give us a headache, it costs a lot of money, but the underwriters are happy and are writing programs. I had never thought it would be happening," he said.

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## Despite Challenge From 16-Bit Models

# Datapro Finds 8-Bit Micros Still Dominate Sales

By Bruce Hoard

CW Staff

DELRAN, N.J. — Although they are being challenged by 16-bit models, 8-bit microcomputers continue to dominate sales, according to a report from Datapro Research Corp. titled "How to Select Microcomputers for the Corporate Environment."

One reason for 8-bit dominance is the vast quantity of

installed, fully debugged software designed to run on 8-bit microprocessors under 8-bit microcomputer operating systems, the report noted. In addition, there are many more 8-bit microcomputers in the marketplace, and they are generally less expensive than 16-bit models.

However, more sophisticated applications requiring more memory will appear in

the future on 16-bit microprocessor-based products, the study noted. Beyond that, the 16-bit microprocessors and some 8-bit microprocessors with extended memory capability will capture an increasingly large share of the market as memory prices fall and a large number of advanced application packages become widely available.

"In the corporate environment, the trend is to recognize and accept the entry of microcomputers as another tool to improve the productivity and quality of the decisions made by technical and management employees," the 26-page report claimed.

It stated that buyers should consider vendors' reputations, their levels and availability of service, their market share and their stability. Market share and reputation are not meaningful for new entries into the marketplace, the report noted.

### Protect Investments

The study suggested that buyers can protect their investments regardless of vendor by purchasing a system that utilizes one of the standard microcomputer bus architectures such as 5100,

IEEE-488 or Multibus.

The service provided for microcomputers is not as good as that offered for large computers because of their low prices. That deficit is balanced off by high microcomputer reliability. Mean time before failure on most components of a microcomputer system is expressed in years and the mean time to repair is expressed in minutes.

New microcomputer users can waste a lot of time learning how to operate their machines. Yet if they do not take enough time, they may not use them as efficiently as possible or take advantage of all their capabilities. To avoid such problems, the report recommended a training program that:

- Instructs users in the use of the most broadly distributed software packages.

- Provides information on the use of the operating system and its utilities.

- Informs users of the basic requirements, responsibilities and procedures for protecting their data and equipment.

With respect to microcomputer costs, the report maintained that "you will not know the full cost of a microcomputer system until you

make a complete assessment of your hardware and software requirements. Peripherals can be very expensive and purchasing a large number of software packages can add up to a substantial sum of money."

Calling applications software the "critical component" of the microcomputer system, the report noted that the system is only as valuable as the applications it runs. In some cases, hardware selection may actually hinge on the software to be run.

The report claimed it is unlikely that users will find exactly what they need in many applications packages. What they should do is determine which of the available programs provide most of what they want, lacking only in areas without which they can get by.

Some applications packages may not be powerful enough to deal with problems or the size of complexity presented in an operation. A package that is too powerful is likewise of little use.

The report is available for \$19 from Datapro Research at 1805 Underwood Blvd., Delran, N.J. 08073.

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## EDPAA to Meet in Los Angeles

LOS ANGELES — The EDP Auditors Association (EDPAA) will hold its 1983 international conference here June 19-22.

"Preparing for New Chal-

lenges" is the theme of this year's conference. The keynote speaker will be Charles P. Lecht, founder, president and chairman of the board of Lecht Sciences, Inc.

## ICCP Says 4,300 DPer Took CDP Exam on May 7

CHICAGO — Some 4,300 people registered for the May 7 Certificate in Data Processing (CDP) examination, with candidates taking the test in 165 test centers in the U.S., Canada and 17 foreign countries.

The Chicago-based Institute for Certification of Computer Professionals (ICCP),

which administers the exam, claimed that a record number of people took the 1983 exam.

"Certification for computer professionals still has its critics," Robert P. Campbell, president of ICCP, maintained. "But the numbers show it has its proponents as well."

One criticism of the certification is the lack of evidence that it influences hiring or promotions. "It is the general consensus that recruiting firms don't consider CDP a major factor," Martin Kantor, a spokesman for ICCP, said.

The CDP exam has been offered since 1962. It was originally given by the Data Processing Management Association. In 1973, ICCP took over administration of the test.

An estimated 24,000 DPer's held a CDP, Kantor said.

Conference tracks will focus on computer auditing, advanced computer auditing, security and contingency planning, technical methods, special interests, personal growth and small computers. The registration fee is \$400 for members, \$450 for non-members. More information is available from EDPAA at 373 S. Schmale Road, Carol Stream, Ill. 60187.

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## End-to-End Encryption Called Useful for Common Carrier Nets

By Robert Bell

CW West Coast Bureau

OAKLAND, Calif.—End-to-end encryption schemes are increasingly attractive to those who want security on common carrier packet-switched networks.

This was the theme of a presentation made here last week at the 1983 Institute of Electrical and Electronics Engineers (IEEE) Symposium on Security and Privacy by Derek Barnes of the UK Ministry of Defense.

Barnes said that in order to achieve a high level of secure end-to-end schemes, a number of techniques must be used in conjunction with one another. However, he pointed out that the technology now exists for building such systems for both commercial and military applications.

Barnes told the symposium, sponsored by the IEEE Computer Society Technical Committee on Security and Privacy, that packet-switched network security can be provided by various combinations of four techniques—encryption, authentication, access control

and computer security.

End-to-end security can be utilized in any community of users, he claimed, to protect their particular data on a common carrier packet-switched network. "In any end-to-end security scheme, it is necessary to place some trust in the operation of computer systems. For example, it is necessary to trust computers to isolate the plaintext data from the transformed data and to provide a mechanism for allowing some control information to bypass the transformation process," he explained.

Barnes added that while the reference monitor—which is a combination of machine hardware and trusted software, often known as a security kernel, used to control the operation of a computer system—is a well-known concept in computer security, very few machine architectures are suitable for

its true implementation.

"Formal techniques have not yet been established for proving completion and isolation properties. It is in these areas that design mistakes often occur in present systems, particularly if they require large or complex trusted computing bases," he said.

Nevertheless, Barnes maintained, it is currently possible to apply successfully formal verification techniques and rigorous design practice to dedicated small systems that are isolated from general-purpose operations.

"Such dedicated systems can, for example, be components of the network or even network front ends for general-purpose systems. Thus, while it is not possible to provide multilevel, secure computer systems, multilevel secure networks can be realized now," he concluded.

## Data Base View Depends On System, Specialist Says

OAKLAND, Calif.—The question of who should define the use of data base views in securing multilevel data base management systems (DBMS) was the subject of a paper presented at the Institute of Electrical and Electronics Engineers' 1983 Symposium on Security and Privacy here last week.

Assignment of data base view definition responsibility depends on whether computing policy is centralized or decentralized, according to Billy Claybrook, data security specialist at Mitre Corp. in Bedford, Mass.

"In commercial DBMS," Claybrook explained, "a data base administrator customarily defines user subspaces. Another possible solution is to allow individual users to define views for their own private use, but views defined for nonprivate use would be under the control of a system administrator or security officer."

In systems where views must be classified on a system-wide basis, Claybrook suggested that view definition be under the control of a security officer. "It should be clear that modification of view definitions by users other than a centralized authority can be catastrophic, perhaps affecting the entire data base," he warned.

Claybrook suggested the establishment of a hierarchical structure regarding who should define views and grant access to information. "For example, a system administrator would own all data bases, authorize user access to the data base and have the right to perform all operations. Owners could define private views for personal operation on their own views and authorize user access to their private views," he concluded.

## Justice Study Addresses Computer Crime

SPRINGFIELD, Va.—A five-volume study of computer crime topics has been

completed by the U.S. Department of Justice with the issuance of "Computer Crime: Computer Security Techniques." The final volume describes 82 computer security procedures used in several government, industrial and academic organizations. Each procedure was evaluated for strengths, weaknesses, cost and target vulnerability, a spokesman said.

Controls reportedly are

described for achieving manual assurance of data integrity, physical and operations security, management-initiated controls, computer program development and maintenance, computer system controls and terminal access controls, according to the spokesman.

Each of the five volumes can be purchased separately: "Computer Crime: Computer Security Techniques," \$13.50; "Electronic Funds

Transfer Systems and Crime," \$13.50; "Legislative Resource Manual," \$11.50; "Criminal Justice Resource Manual," \$19.50; and "Expert Witness Manual," \$11.50.

In addition, the entire set of five volumes can be purchased for \$61.50, the spokesman said.

All five volumes are available from the National Technical Information Service, which is located at 5225 Port Royal Road, Springfield, Va. 22161.

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## Afips Publication to Focus On Anniversary of IBM 701

ARLINGTON, Va.—An entire issue of the *Annals of the History of Computing*, produced by the American Federation of Information Processing Societies, Inc.

### Meet to Cover User Manuals

PITTSBURGH, Pa.—"Developing Effective User Manuals," a one-day seminar sponsored by Carnegie-Mellon Communications Design Center, will be held here on June 25.

The seminar is for computer programmers and writers who produce software documentation for users and is based on research conducted at the Communications Design Center during the past year.

The registration fee is \$100. More information is available from the center at Carnegie-Mellon University, Pittsburgh, Pa. 15213.

(Afips) has been devoted to the subject of the 30th birthday of the IBM 701 computer.

The editor of this special issue is Cuthbert Hurd, who in 1951 convinced IBM—which until then had primarily built only punched-card machines—to invest its resources in an all-electrical, high-speed digital computer to aid the Korean War effort.

First called the Defense Calculator, the Model 701 was formally introduced at a ceremony in New York in April 1953. Over the next two years, 19 machines were delivered to defense-related installations around the country.

This volume of *Annals of the History of Computing* is available to Afips members for \$9 and to others for \$12, a spokesman said. Further details may be obtained from Afips at Suite 800, 1815 N. Lynn St., Arlington, Va. 22209.



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# 'Trusted DP Systems' Seen Vital to Net Security

By Robert Batt

CW West Coast Bureau

OAKLAND, Calif. — The emergence of "trusted computer systems" will be a vital contribution to the security of data processing networks. Whitfield Diffie, manager of secure system research at Bell-Northern Research of Mountain View, Calif., told attendees at the recent Institute of Electrical and Electronics Engineers Symposium on Security and Privacy here.

The term "trusted systems" has been coined to identify computers that employ enough hardware and

software integrity measures to allow the distribution of highly confidential or classified data. Together with encryption devices, Diffie claimed, they are essential components for performing communications networks secure.

However, there is an element of competition between the two concepts, Diffie said. "At one extreme, a network can employ end-to-end encryption as its primary security mechanism. In such a network, two users in secure contact rely on their exclusive possession of a common key to guarantee that their messages cannot be understood or imitated by others, regardless of whether intervening components of the network perform correctly or not." In this

case, he asserted, trusted systems are limited to making decisions on how keys are to be distributed.

"At the other extreme, a network can employ cryptography only to create the appearance of overall physical security. Link encryption, for example, is used to protect the exposed communications paths and for no other purpose. The problem is reduced to that of designing a multi-level secure operating system; the fact that it may span continents is concealed," he added.

Diffie said the advantage of encryption is that it is a well-developed art, while trusted system technology is relatively new and prone to the performance and cost problems common with new technologies.

"The user of a system that relies primarily on trusted systems technology may be extremely well protected from opponents outside the network, but can have no true security from the network builders and administrators." Such a system, he suggested, is best suited to users who are employees and act within a hierarchical structure.

"The user of an end-to-end encrypted network, on the other hand, can be very certain that his traffic is protected from everyone except the person he is conversing with." He noted, however, that it could be argued that encryption is inflexible and cannot adequately support the complex security policies required by large corporations.

## Researchers Say Security Kernel Poses Obstacle

OAKLAND, Calif. — Attempts to construct secure general-purpose operating systems have been largely unsuccessful because of the reliance on a security kernel as the primary mechanism for enforcing privacy, according to a paper presented at the recent Institute of Electrical and Electronics Engineers Symposium on Security and Privacy.

"Because it provides an additional level of interpretation, a security kernel necessarily imposes some performance degradation [which] is likely to be greater when general-purpose, rather than specific, applications must be supported," explained coauthors J.M. Rushby and B. Randell of the University of Newcastle upon Tyne in the UK. In addition, "the division of a conventional operating system into untrusted and trusted [security kernel] components is a complex and expensive task which cannot easily accommodate changes and enhancements to its base operating system."

The answer to such problems, the researchers asserted, is to build a distributed secure system rather than a secure operating system.

The most significant feature of this approach, they claimed, is that it allows host machines that are not trusted systems to provide their full functionality and performance, while enabling the security mechanisms to be isolated, single-purpose and simple.

"With this approach, it is possible to construct secure systems whose verification is more compelling and whose performance, cost and functionality are more attractive than is the case at present," the authors added.

## Group Established For DP Recruiters

NEW YORK — The Wall Street EDP Recruiters Association is the name of a recently formed group of people involved in DP recruitment.

The group convenes on a monthly basis to discuss recruitment, benefits, training programs and agency usage. More information on the group is available from Gary Mass at EDP Recruiters, Drexel Burnham Lambert, Inc., 24th Floor, 60 Broad St., New York, N.Y. 10004.



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## Guidelines Offered at Software Meet

# How to Choose a Consultant: Exec

By Paul Gillin

CW Staff

CHICAGO — The value of using a data processing consultant can be greatly enhanced if a manager follows some guidelines in selecting, accommodating and monitoring the research done by the consultant.

Those guidelines were presented at a session entitled "Effective Use of Consultants" at the recent conference of Future, the user group of Management Science America, Inc.'s (MSA), General Ledger/Fics system held here. The speaker was Maurice G. Weinberg, director of management consulting at Sycomm Systems Corp. of Middlesex, N.J.

Managers who shy away from using costly consulting services in favor of tackling the problems themselves should ask whether they are actually wasting money by taking away time from more pressing projects, Weinberg said. Consultants are useful for a range of applications including evaluating current systems, choosing security and disaster backup methods and performing system audits, he noted.

If you choose to hire a consultant, "don't try to solve a political problem, like getting rid of a manager you don't like," he said. "What if the consultant finds out the manager is doing a good job?"

Make sure you do not already have a solution in mind, Weinberg stressed. "You want a broad scope of solutions."

Before looking for a consultant, develop a set of objectives and goals which can be used to monitor the project throughout, he said. Goals should be stated up front to avoid having to change direction in mid-stream.

Do not choose a consultant by browsing through the phone book. "Talk to business associates to get references. Ask your accountant or banker," he suggested. Do not be afraid to ask questions to ensure you get a reputable firm. Ask the consultant for references, and call the references to identify possible trouble spots.

One often ignored task is to find out whether the consultant has a vested interest in recommending a solution. "If you call up Big Blue for a proposal, they're always going to recommend Big Blue," he said. Similarly, avoid hiring a consultant who will recommend his own software package to solve your problem.

On a major project, it is a good idea to identify three or four candidates and get a proposal from each. And before making your selection, interview the consultant "to make sure the chemistry is good. These people will be getting into some sensitive areas of your business," he noted. A consultant who consistently stresses his strengths in areas other than your needs is probably not for you, Weinberg said.

### Put Price Last

When making your selection, "please, make price your last consideration, especially on major projects," he advised. Also, look at the characteristics of the company under bid. "Will the total resources of the company [if necessary] be brought to bear upon your project?" he asked. Small consulting firms are particularly vulnerable to pulling experts off your job if another one comes in, he said. Make sure the consultant will be yours for the duration.

The initial meeting with the consultant should set out the objectives of the project and provide for regular client reviews. Responsibilities should be laid out in advance, he advised. The client needs to provide office space and access to the necessary people and materials. The consultant should provide regular reports, working hours and an idea of what resources he needs.

During the project, the manager should attempt to provide all the information the consultant needs, Weinberg advised. A teamwork spirit is desirable, and the best way to do that is to assign people within the organization to work with the consultant to answer necessary questions.

"There always is a problem somewhere with someone not letting go of data," he said. "But the less data he has to work with, the worse the answer will be." Weinberg said he usually requests three to four times as much data as he actually uses. "Because there might be little pieces here or there that I'll find useful."



Interview potential consultants 'to make sure the chemistry is good,' Sycomm's Maurice G. Weinberg advised recently. "These people will be getting into some sensitive areas of your business."

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# Lawsuits Seen on the Rise With Systems Use

By Jeffrey Beeler

CW West Coast Bureau  
WALNUT CREEK, Calif. — Customers and vendors will increasingly find themselves embroiled in contract disputes involving systems that fail to work as the users intended, according to a local attorney specializing in computer-related litigation.

The reason such disputes are likely to increase is that systems use in the business world is rapidly growing, lawyer Richard Perez said here during a recent East Bay Chapter meeting of the Association for Systems Management.

As the number of systems installations steadily increases, so too will the population of disgruntled users and the volume of contract questions that could eventually end in lawsuits, Perez said during his presentation late last month.

## No One Can Escape

Although small, technically illiterate companies will probably account for the majority of contract fights, no firm will be entirely immune from the problem of ineffective systems and unresponsive vendors, not even big businesses with professional computing staffs, he said.

Perez, whose legal counsel won nearly \$3 million for the Oakland, Calif.-based Glavatorium, Inc. in its fraud suit against NCR Corp., described most users as "inordinately patient" in working with uncooperative vendors and trying to debug bulky systems. Perez's characterization contrasts sharply with the view expressed by many vendors that often accuse users of being "trigger happy" in filing breach-of-contract or similar suits, he said.

Some of the system elements that

are most frequently the subjects of user-vendor disputes include items like:

- Keyboards, which sometimes suddenly quit working and, in so doing, pave the way for the corruption of users' data files.

- Documents that are supposed to show the same balances but for unknown reasons fail to do so.

- Software that fails to provide adequate audit trails.

- Memory that is sometimes insufficient in capacity to perform a customer's intended applications.

- CRT terminals that a system sometimes proves unable to support in adequate numbers to meet a users' needs.

When confronted with complaints

that their products fail to work as expected, uncooperative vendors often respond with one of two classic counterclaims: that the user's operators are incompetent or that the customers are using their systems differently from what had originally been indicated, Perez said.

If users become so dissatisfied or frustrated that they threaten to sue, unresponsive vendors often resort to a second set of stock replies, he added. They either tell customers they waited too long to file suit or cite contract provisions that apparently limit the amount of a buyer's remedies to the purchase price of the system.

On the surface, the "limited remedy" argument may sound so convinc-

ing that users might conclude they have no legal recourse and might abandon any plans to sue, Perez said.

But a contract clause limiting a customer's legal or financial remedies can be disqualified if a vendor can be proven guilty of fraud or if the company dragged its feet in addressing a user's problem.

The damages that a user can collect from a negligent vendor as a result of a lawsuit can allow the customer to recover far more than just the original cost of the system. The potential award can also cover the damages that a customer's business sustained during the organization's unsuccessful effort to get a defective system working to specifications, Perez said.

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## Database '83 Set for May 15-18

DENVER — Database '83, the meeting of the independent Cullinet Software, Inc. IDMS User Association, will be held May 15-18 at the Marriott-City Center here.

Speaking at the conference will be Francis A. Frank, vice-president of professional services at Keane, Inc., who will address the issue of "Productivity Management"; Shakti Atre of Atre International Consultants, Inc., who will discuss "Effective Database Design"; and Edward Yourdon, president of Yourdon, Inc., who will focus on "Future Trends in Software Development."

Database '83 also will feature more than 30 seminars presented by IDMS users and Cullinet Software representatives. These sessions will cover such topics as "Microcomputers Interfacing to Mainframes," "Productivity Aids and Performance Testing" and "Using Data Base for More Than Storing Information."

Formed in 1974, the IDMS User Association is an independent non-profit organization with more than 400 members. More information about the organization and its upcoming conference is available from Database '83, 8702 Delray Circle, Westminster, Calif. 92683.



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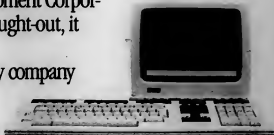
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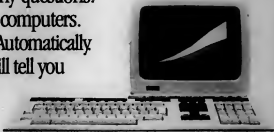
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## Hopper to Receive Award At AWC Meeting May 15

ANAHEIM, Calif. — The Association for Women in Computing (AWC) has announced that it will present its 1983 award for excellence, the Ada Augusta Lovelace Award, to Capt. Grace Murray Hopper, U.S. Naval Reserve, at the Association's second annual national conference on May 15. The daylong event, at the Sheraton Anaheim, will take place from 8:30 a.m. to 5 p.m.

Hopper, known as the originator of Cobol, is being recognized for her contributions "to the design and development of computer software, for her support of high standards in computer education, her contributions to the advancement of professionalism and her dedication to her country," an AWC spokeswoman said.

Hopper, who will not be there to receive the award in person, has been working with computers since 1943. The recipient of numerous awards, honors and honorary degrees, she was awarded the Data Processing Management Association's first Computer Science "Man" of the Year Award.

The AWC conference's keynote speaker will be Martha Loftis, a vice-president at Cray Research, Inc.

Addressing all levels of the computing profession, session topics at the conference will include women in top management, entrepreneurs, technologies in the forefront in the '80s and career mutations. There will be an opportunity for communication among women from various computer-related disciplines and from all parts of the country.

Sessions will cover software engineering, distributed systems and data bases, as well as a historical perspective on women in the computer

industry and issues facing women in computing today.

Prior to the conference, AWC will hold its board of directors meeting on May 14 at the Sheraton Anaheim. The meeting will be followed by a chapters' workshop, scheduled not to conflict with conference sessions this year.

The conference is open to the public. Registration fees are \$20 for AWC members and \$30 for others. Registration takes place at the door.

More information from the conference is available from Betty Hein, program chairwoman, 5937N Airanga Springs, Rancho Palos Verdes, Calif. 90274.

## Have You Got the Picture?

Is one picture really worth a thousand words? Or — more importantly — is the picture worth the cost of generating it in terms of time savings and productivity gains?

Computerworld's July 25 issue will contain a Special Report on graphics systems. The report will explore the latest technologies, techniques and applications in the computer graphics market, examining the range of applications from computer-aided design (CAD) to all the levels of business graphics.

In particular, CW wants to look at emerging trends in low-cost CAD and three-dimensional graphics, graphics terminals and

software, the market for color printers and other output equipment and boardroom graphics.

CW welcomes graphics application stories, war sagas, tutorials and other testimonials related to the report. The manuscripts should be no longer than four to six double-spaced, typewritten pages. Preference will be given to articles with black-and-white photos or charts and graphs (originals, please).

The stories should be sent by June 10 to Jim Bartimo or Bill Laberia, both of whom can provide further details on the Special Report, at Computerworld, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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## Slotnick Gets IEEE Award

CHAMPAIGN, Ill. — Daniel I. Slotnick, professor of computer science at the University of Illinois, has received the Institute of Electrical and Electronics Engineers (IEEE) Computer Society's W. Wallace McDowell Award for his "pioneering contributions to centrally controlled parallel computers and for his achievement in creating the parallel computer, Illiac IV."

A graduate of Columbia University, Slotnick was the University of Illinois' director and principal investigator of the Illiac IV computer project. The high-speed computer was designed at the university, manufactured commercially and installed at the National Aeronautics and Space Administration's Ames Research Laboratory at Moffett Field, Calif.

In 1962, Slotnick was awarded the annual prize of the American Federation of Information Processing Societies, Inc. for his work on the Solomon computers at Westinghouse Electric Corp.


The McDowell award was established through a grant by IBM in honor of a retired IBM vice-president.



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## Users Group Lauds TI Management For Responsiveness, Willingness to Listen

By Susan Blakeney  
CW Staff

NEW ORLEANS — Why did Larry Briggs volunteer to run for office at the very first meeting of TI-MIX, the national Texas Instruments, Inc. users group, that he attended?

"I thought I knew it all... and I saw the potential for bringing non-technical perspective to TI-MIX. I thought it would be valuable to have a nontechnical person on the com-

mittee," he said.

Since then, Briggs, who is director of sales and marketing at Timberline Systems, Inc. in Beaverton, Ore., as well as vice-chairman of TI-MIX, has somewhat revised both his opinion of the group and himself.

"I've learned a lot from TI-MIX. The TI management has a great attitude toward the users group. They are very responsive to specific suggestions... their willingness to listen and act has been terrific," he said.

Briggs wants to incorporate this formula into his own company's users group. Timberline Systems, said to be TI's largest OEM, markets a range of minicomputer software systems for construction management, property management and management organization management, Briggs explained. He wants to apply TI's "TI-MIX-is-important-to-us" philosophy to Timberline.

"I think this [is] very smart of TI. Otherwise, these users group meetings could become a real [grape] group centering on the negative rather than looking at the positive,"

Briggs went on to say.

He spoke hedgingly of the vendor's shift into the micro arena. He believes TI is in a state of transition now, with the heavy emphasis going toward personal computers rather than its users. But Briggs was quick to add, "nothing is perfect."

### Room for Improvement

Mike Roginsky, who designs flight test equipment for Lockheed Georgia Co., and who has been a TI-MIX member for six years, also believes there's room for improvement in TI-MIX.

Unlike Briggs, he is a technical person — a self-described "chip man" in fact — and feels there is a real need for the "chip man to have some say so" in TI-MIX.

"We have lots of problems," Roginsky confessed. "It's getting very turnkey-oriented. They're not catering to the microprocessor designer," as much as he would like.

Thus Roginsky chaired a session at the recent national TI-MIX meeting here on "Hardware Concepts," with the objective of "getting the user's point of view on interface solutions." Roginsky said his company has



Larry Briggs

very special needs. "We take their [TI's] chips and build our own data systems for airborne use... custom-made systems. We depend on their development; that's why it's important for me to be here."

He believes TI should steer itself more in line with his needs.

"They are not providing me with the military qualifications on the chip that I need," he said.

"But the majority of this users group is business-oriented and OEM-oriented. We're just a small voice. We sound off the best we can — and hope they will hear," he said.



Mike Roginsky

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## Reluctance to Use Local Nets Still Evident, Says IDC Exec

By Jim Batrino  
CW Staff

TARPON SPRINGS, Fla. — "Users still appear reluctant to leap over the edge of full-blown local-area networks," says William Zachmann, vice-president of technology assessment for International Data Corp. (IDC), said here recently. "The number of campuswide installed systems is still very small."

Zachmann reviewed the current local-area network picture and its future at IDC's 14th Spring Executive Conference in a session titled "Local-Area Network Implementation in the Office."

A user has to decide what kind of transmission media to use (twisted pair, coaxial cable or fiber optics), what kind of access method (token passing, time division multiplexed access or carrier sense multiple access with collision detect (CSMA/CD)) and what kind of topology (star, ring or bus).

"It's a tough set of choices and there is no absolutely clear answer," Zachmann said. "But on the other hand, we are seeing installations picking up. It will be a year or two before most users have a local-area network."

Even local-area networks installed today are what Zachmann called "work-area networks" that work with only six or eight connections and serve only a department rather than the entire company.

But local-area networks are inevitable because "without the basic physical level of connectivity that a local-area network can provide, there can be no real integration of electronic office systems," Zachmann said.

Although the ultimate decision will be made in the marketplace, Zachmann predicted which network choices are likely to survive in the next few years.

For work-area networks, Xerox Corp.'s Ethernet and IBM's not-yet-released token ring network will be widely used.

For true local-area networks, users can expect to see much of CATV broadband systems with both CSMA/CD and token bus access methods.

Another reason there are so few networks installed is that various departments have different ideas about the definition of a local-area network. "Business people are not familiar enough with the technology," he said. "Data processing looks at it like a traditional form of data communications, and the telecommunications department wants to see the PBX (private branch exchange) run the network."

While many industry experts claim that a PBX telephone system can be best used to implement a local-area network over existing phone lines, Zachmann called this "largely a phony issue." He predicted that, as complementary technologies, a PBX and a local-area network will work together and the distinction between them will eventually blur.

No one is exactly sure how local-area networks will be used, Zachmann said, because it is common to apply too many old ideas to a new technology.

"Local-area network technology does not work the way traditional data communications does," he said. "It will be used that way for a while, but it will be different."

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### **1. New state-of-the-art customized 32-bit VLSI chip set**

Four VLSI chips — a Central Processor Chip (CPC), an Address Translation Chip (ATC) and two System Interface Chips (SIC) — are the heart of the 9300.

Together, these chips share the 9300's workload so that you realize the power and performance of three types of microprocessors instead of just one.

### **2. Ten boards of electronics reduced to one reliable VLSI chip**

Using Very Large Scale Integration, NCR now puts the electronics of ten 11"x14" printed circuit boards on the Central Processor Chip no larger than a dime. Not only does VLSI save space, it eliminates almost all of the vulnerable electrical connections where system failures usually occur.

### **3. Guarantee your data integrity with memory scrubbing**

NCR's newly patented memory scrubbing method cleans the 9300's four megabytes of main processor memory every 16

seconds! It does this by correcting any transient single-bit errors — effectively eliminating catastrophic double-bit memory errors. All of this is done automatically by the Address Translation Chip with no central processor overhead.

### **4. Mainframe power in a two cubic foot, fifty-pound box**

With the 9300, you can put full 32-bit VLSI power almost anywhere. The 9300 weighs only fifty pounds and measures a scant 7.5"x17.6"x25.8". The processor requires no special air conditioning or humidity control. In office or computer room, put the 9300 processor wherever it's convenient for you — even on the wall.

### **5. Uses a standard 120-volt outlet while cutting power consumption 90%**

The 9300 uses only 0.4 KVA compared with the 4 KVA requirements of comparable mainframes. Plus, there is no need for heavy-duty wiring.

The 9300 runs on readily accessible voltage and conventional wiring.

### **6. New ITX operating system links high and low order processing**

The new Interactive Transaction Executive multiprogramming operating system extends the 9300's communications capabilities

beyond NCR's multi-industry expertise in interactive transaction processing. With ITX, the 9300 provides the unprecedented link in interfacing multiple CRTs, industrial terminals, retail terminals and financial terminals, local and remote. The 9300 extends communications to other NCR processors through use of remote





batch or DDP, and to non-NCR processors in SNA environments.

The Terminal Application Processing System (TAPS\*) takes the complexity out of transaction processing. It works with ITX to provide efficient and consistent handling of transactions. It provides standardized coding to simplify development of sign-on, sign-off and security procedures, the design and sequencing of screens and the editing of data formats. It takes transaction processing out of the application programs.

In addition, ITX offers automatic load leveling, batch queuing and remote support. And you have COBOL and BASIC for application programming, with more languages to come. Of course, ITX adheres to NCR's philosophy of easy and fully supported system migration. For I-series users that means continuing compatibility with current interactive operating systems.

**7. Choose your computer environment — Host, DDP, SNA**

The 9300 has the unsurpassed ability to work for you in a host environment, in a peer-to-peer Distributed Data Processing environment and in an SNA network. Whatever your choice, you get the communications support you need — SDLC, X.25, BSC, DLC, TTY and ISO-Async. And the 9300 integrated communications allow you to connect up to 42 lines. In a DDP environment, the 9300 supports message passing between peers, including NCR's IRX, IMOS, and VRX. In an SNA network, the 9300 provides you with the vital link between high and low order processing.

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## Calendar

## Week of May 8

May 11-12, Denver, Mass. — Electronic Corporate Publishing. Contact: Interconsult, New Information Technologies, 21 Notre Dame Ave., Cambridge, Mass. 02140.

May 11-13, Los Angeles — Fourth Annual Computer Law Institute. Contact: University of Southern California, Law Center, Room 105, University Park, Los Angeles, Calif. 90089.

May 11-13, Washington, D.C. — Software Quality Assurance. Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

## Week of May 15

May 16-17, San Francisco — Inter-

national Communications: Products, Technology and Regulation. Contact: Business Communications Review Enterprises, Inc., 950 York Road, Mundelein, Ill. 60051.

May 16-17, New York — Fundamentals of Data Processing and Telecommunications. Contact: National Institute for Management Research Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.

May 16-18, Denver — Micro and Home Computers: Technology and Applications. Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 16-18, Washington, D.C. — Structured Analysis and Design. Contact: Institute for Advanced

Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 17, New York — Computer-Assisted Manual Writing. Contact: Prompdoc, Inc., Colorado Ave., Colorado Springs, Colo. 80905.

May 17-19, Minneapolis — Data Communications Network Design and Optimization. Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 18-19, Washington, D.C. — Telephone Bypass Opportunities and Local Access. Contact: Telestrategies, Inc., Suite 102, 6842 Elm St., McLean, Va. 22101.

May 18-20, New York — Word Processing VII. Contact: National Institute for Management Research

Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.

May 18-20, New York — Artificial Intelligence Applications for Business. Contact: New York University Symposium Series, c/o Computer Applications and Information Systems Department, 700 Merrill Hall, 90 Trinity Place, New York, N.Y. 10006.

May 18-20, Palo Alto, Calif. — Man/Machine Interface. Contact: Continuing Education Institute, Oliver's Carriage House, 5410 Leaf Trader Way, Columbia, Md. 21044.

May 19, Atlanta — Computer-Assisted Manual Writing. Contact: Prompdoc, Inc., Colorado Ave., Colorado Springs, Colo. 80905.

May 19-20, San Francisco — Local Area Networks: Equipment and Systems. Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424.

May 19-20, Boston — How to Evaluate and Select Computer Software. Contact: Battelle Memorial Institute, Seminars and Studies Program, 4000 N.E. 41st St., P.O. Box C-5395, Seattle, Wash. 98105.

May 19-20, New York — Unix: Concepts, Functions, Applications. Contact: American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

## Week of May 22

May 23-25, San Francisco — DP Disaster Recovery Seminar. Contact: EDP Security, 181 West St., Waltham, Mass. 02154.

May 23-25, Washington, D.C. — Practical Data Security: Implementation and Management. Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 23-25, New York — Structured Testing. Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 23-27, New York — AOE/VS Operator Training. Contact: Data General Corporate Educational Services, 4400 Computer Drive, Westboro, Mass. 01580.

May 23-27, Cambridge, Mass. — Digital Signal Processing: Hardware, Software and Systems Design. Contact: Institute for Advanced Professional Studies, 55 Wheeler St.,

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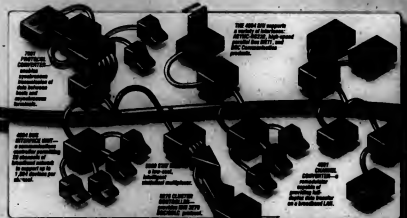
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## Calendar

Cambridge, Mass. 02138.

May 23-27, Washington, D.C. — **Computer Performance Measurement and Capacity Planning.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 24, New York — **Personal Computers in the Business Environment.** Contact: Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

May 24-26, Los Angeles — **Managing Programs and Projects.** Contact: Continuing Education Institute, Oliver's Carriage House, 5410 Leaf Treader Way, Columbia, Md. 21044.

May 24-26, Houston — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

May 24-26, Palo Alto, Calif. — **Microprocessor Background for Management Personnel.** Contact: University Extension, University of California at Berkeley, 2223 Fulton St., Berkeley, Calif. 94720.

May 24-27, San Francisco — **Data Communications: Components, Systems and Networks.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

May 24-27, San Diego — **Designing VLSI.** Contact: Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405.

May 25-26, Portland, Ore. — **Information Processing '83.** Contact: Biggs McGowan Public Relations, 2187 S.W. Main St., Portland, Ore. 97205.

May 25-27, Boulder, Colo. — **Seminar on MVS/XA.** Contact: Trailbridge Associates, 14300 W. 50th, Golden, Colo. 80401.

May 25-27, Los Angeles — **Data Communications: An Introduction to Concepts and Systems.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 25-27, Boston — **The Personal Computer Strategies for Managing.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 25-27, New York — **Local-Area Networks: Selection and Guidelines.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 25-27, Chicago — **Data Communications for Microcomputers.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 26, New York — **Long-Range and Strategic Planning for DP.** Con-

tact: Management International, Seminar Data Center, Box 1510, FDR Station, New York, N.Y. 10150.

May 26-27, Boston — **Fundamentals of Data Processing for the Non-Data Processing Executive.** Contact: The Wharton School, University of Pennsylvania, Executive Education, Dietrich Hall, Locust Walk, Philadelphia, Pa. 19104.

May 26-27, New York — **Workshop for the New Security Officer.** Contact: Computer Security Institute, 43 Boston Post Road, Northborough, Mass. 01521.

May 26-27, Cary, N.C. — **SAS Col- or Graphics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

May 27, Toronto — **Productivity**

and Performance Planning for DP. Contact: Management International, Seminar Data Center, Box 1510, FDR Station, New York, N.Y. 10150.

## Week of May 29

May 30, Columbus, Ohio — **DOE/VSE Job Management.** Contact: Education Coordinator, Goal Systems International, Inc., The Goal Systems Building, 545 N. High St., Columbus, Ohio 43214.

May 30-June 1, Toronto — **CAD/CAM & Robotics Exposition.** Contact: Society of Manufacturing Engineers, Public Relations Department, 15ME Drive, P.O. Box 930, Dearborn, Mich. 48128.

May 31-June 1, San Francisco — **Mumps Development Committee**

Meeting. Contact: Thomas C. Sander, Computing Facility, New York State College of Veterinary Medicine, Cornell University, Ithaca, N.Y. 14853.

May 31-June 2, Boston — **Project Management and Control.** Contact: QED Information Sciences, Inc., QED Plaza, P.O. Box 181, Wellesley, Mass. 02181.

May 31-June 3, Dallas — **Structured Requirements Definition.** Contact: Gayle Giescke, Ken Orr & Associates, Inc., 1725 Cage Blvd., Topeka, Kan. 66604.

May 31-June 4, San Francisco — **12th Annual Mumps Users' Group Meeting.** Contact: Mumps Users' Group, P.O. Box 37247, Washington, D.C. 20013.

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## EDITORIAL

### Tackling the Factory

If attendance at the Info Manufacturing '83/Hi-Tech '83 conference held recently in Chicago is any indication, DP professionals may soon be called upon to tackle one of the least computerized segments of American industry — the factory.

Statistics from the show demonstrate the magnitude of this new interest: The three-day attendance of 9,000 exceeded the 1982 figure by 50%. Many of the sessions were filled to overflowing. And vendors polled by *Computerworld* on the exhibit floor generally concurred that attendance exceeded their expectations [CW, May 2].

Vendors also commented that they were hearing more informed questions from the users who, for the first time in two years, seemed to have money in hand.

Furthermore, an informal survey of attendees found that most were at their first Info Manufacturing conference and nearly all were planning to do some shop floor computerization within a year.

All this points to yet another path in the labyrinth of potential applications DP will explore in coming years. Many experts say that since the U.S. cannot compete with other countries in the wage arena, we need to develop further the advanced control systems that other countries are so eagerly trying to emulate. The U.S. has been surpassed in its ability to achieve maximum productivity from human beings, they say, but our ability to plan is second to none.

The potential of technologies like material requirements planning (MRP), shop floor control, data collection and bar coding for material and inventory management is evident from the degree of user interest they inspired. One visitor at Info Manufacturing '83 commented that his recently installed MRP system had saved several million dollars, while another said MRP had helped his company turn over its entire inventory one more time each year.

Vendors are turning an ear to the expanding marketplace on the factory floor. The crowd at this year's show included a half-dozen major software vendors and nearly every mainframe company. IBM has ordered floor space for next year's Info Manufacturing that is nearly double the size it took this year, according to Terry Brooks, show manager. In fact, the total exhibit space reserved for the 1984 show already exceeds that of this year.

As manufacturing becomes aware of attractive new computer applications in the factory, DP managers will be called upon to do yet another hat. The vision of more work for an already overloaded staff may not bring a smile to the DP executive's face, but it presents another major opportunity to bring computing resources to bear in a manner that will certainly benefit the business.

## DATA PAST

### Five Years Ago May 8, 1978

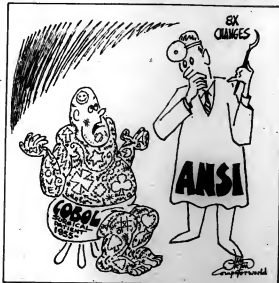
NEW YORK — A hardware vendor joined the growing list of IBM 370-compatible, medium-scale systems suppliers when National Semiconductor Corp. announced its first general-purpose "minicomputer" to be sold directly to end users as well as to OEMs.

The System 400 came with assorted adapters that permitted interfacing to IBM I/O devices and to five classes of minicomputer peripherals.

### Ten Years Ago May 9, 1973

TULSA, Okla. — Computer users become wedded to their suppliers because of the huge programming investment and the incompatibility problems of changing from one vendor to another, a user witness told the court here as Telex neared the end of its presentation in its \$1.2 billion antitrust action against IBM.

In other actions in the case, Telex witnesses relied almost solely on internal IBM documents.



'Be My Guest, Doc, If You Can Find Any Place Left to Cut.'

## LETTERS

### Bank Data Bases

I am compelled to reply to Stephen E. Seadler's stimulating letter to the editor [CW, March 21] about my in Depth article "Data Is Money" [CW, Feb. 14].

First, much of Seadler's letter is devoted to an explanation, in mathematical terms, of how the money created by commercial banks by means of lending ("bank money") is limited to  $M_1/r$ , where  $M_1$  is money kept in reserve by banks and  $r$  is the reserve ratio, which is the fraction (close to one-fifth) of a commercial bank's deposits that are kept in cash and deposits with the Federal Reserve.

The explanation that I gave in my article is equivalent to Seadler's, although I used the accepted device of a monopoly bank to avoid mathematics and keep the technical terms to a minimum.

Second, Seadler criticizes me for not making clear that the money supply ("current money") is made up of bank money and currency. The core of my article focused on bank money and was a deliberate simplification for the benefit of readers.

Third, the fundamental question addressed in my article is where this bank money is stored nowadays. Seadler believes the money to be stored in bank basements, to judge from his statement "If anybody does want his money" — currency money — he'll find it in the basement — not on disk!

However, should everybody want their money at once, they will find a lot less than the fraction  $r$  in bank vaults.

Admittedly, given time loans can be called in and cash procured, but that shows that bank money is not stored in bank vaults.

My argument that bank money is actually stored on disk in bank data bases is partly based on observation

of the way in which bank money is used.

For example, it is in theory feasible to steal X amount of dollars from a bank by a debit of one field in a bank data base by X amount of dollars, a credit of another field by X amount of dollars and, finally, an issue of checks totaling X amount of dollars for purchase of goods. Physically, such a sequence of transactions involves only data base updates and the flow of goods.

Naturally, I agree with Seadler that there has to be a store of value (assets) in the bank to back the bank money (liabilities of the bank). However, most of this store of value cannot be cash; there is nowhere near enough cash in the bank, and the backing must ultimately be the collateral of the bank's borrowers.

Fundamentally, bank money is a severely limited quantity of IOUs, that is, contracts, issued by banks and backed by collateral. Before the use of computers, IOUs and contracts, in general, always resided on paper. However, there is nothing to prevent IOUs and contracts from residing on magnetic media, provided the parties to the contracts are satisfied with respect to their safety from interference.

When we view money as contracts we see that it can reside on any information storage medium, including computer disk.

I believe this to be a useful and even conservative conclusion, for it should induce those working in bank data base environments to pay particular attention to the security and integrity of bank data bases. On this last point at least, Seadler and I are in agreement.

James Bradley  
Associate Professor  
Computer Science Department  
University of Calgary  
Alberta, Canada

SOFTLINE/Werner L. Frank

# What Makes DP Go? Three Driving Forces

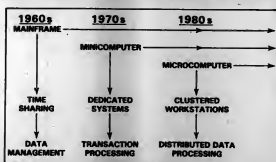
Three discernible driving forces underlie the course of computing (see chart). Such forces bring with them a number of important technological innovations, as well as user-oriented facilities. Also, each force is ascendant for about a decade before being supplanted by another. The '60s might be identified as the period of the mainframe, the '70s as the time of the minicomputer and the current decade as the era of the microcomputer.

Driving forces are important and subtle motivators. The driving force may only manifest itself in the background and is not necessarily an end, in itself. It may articulate the attitude, compulsion and direction that reflects the culture, beliefs or convictions of an individual, organization or nation.

Understanding the driving force can explain behavior and action. Furthermore, it can be used to identify trends, a very useful tool when employed in market planning both by industry vendors and by the DP department of an organization that is responsible for anticipating the needs of end users.

## Decade of Mainframe

Consider first the decade of the mainframe. Here we saw the strong movement toward centralization of computing and the emergence of filefolds of control over large computer installations. The sheer costs of computers were grounds for the cost-effective provision of computing with the largest affordable processor possible. Given such a resource, it became clear that rationalized use would be enhanced through



The Driving Forces

the process of sharing facilities — a computing technique that became known as time-sharing.

Time-sharing served to bring about a large number of related innovations that provided the base for exploitation in succeeding periods. These technologies include:

- Development of multiuser, multitasking computing.
- Organization of communication and networking systems.
- Techniques for remote job entry and on-line programming.
- File and data base management structures.

Two types of systems were offered: the multiuser, single-application variety typified by mainframe-based airline reservations systems and the multiapplication, single-user type characterized by commercial time-sharing offerings.

From the point of view of the user, the most useful benefit that emerged

in this period was the concept and realization of the data management system. Data management served not only to provide a structure for handling and accessing data, but also as the base for the eventual development of powerful applications-generating software, such as Mark IV and Mark V Systems of Informatics General Corp., Nomad of National CSS, Inc. and Ramis II of Mathematics, Inc.

## Shifting Focus

The focus of computing then shifted in the early '70s from the mainframe to the minicomputer. The latter became the driving force as the result of a price breakthrough in making available a computing resource that was not only substantially less costly, but also turned out to be more cost-effective. In this sense, the minicomputer unseated the common belief that the larger the com-

puter, the more economical the computing.

The minicomputer brought about the notion of free-standing, dedicated systems. Now it became possible to commit a single computer to a specific set of related tasks. Two independent movements took place. First, there appeared a new community of users regularly employing the computer in scientific and engineering laboratories, coupled with operations of manufacturing and process control. Second, there emerged a group of users who worked with specific on-line applications, which previously might have operated on a mainframe.

Both of these utilizations depended upon responding to discrete actions initiated by either an on-going process or a human keyboard intervention. From this was born the type of computing that now is called transaction processing.

The functional change that this period introduced into data processing was the decoupling of certain computing from the centralized DP shop to user-operated, remote locations.

A second change introduced through this technology was the use of the dedicated, transaction processing minicomputer in multiple roles: as a front-end processor, a network node and as a remote job entry concentrator for centralized mainframes.

## Force of '80s

The stage was set for the next shift in emphasis and facility. The driving force for the '80s was clearly established in the first two years of this

(Continued on Page 47)

## READER COMMENTARY/August Bequai

# A Bright Future for the DP Criminal?

With the closing of the 97th Congress, efforts to enact the Federal Computer Systems Protection Act of 1981 — H.R. 3970 — came to naught; the bill died in the House Subcommittee on Civil and Constitutional Rights. Although some hearings were held before the subcommittee in the fall of 1982, little else came out of it. Its chairman, Rep. Don Edwards (D-Calif.), promised to study the matter further.

The question that must now be raised is, "Where do we go from here?" Surely, even the skeptics will agree that with the proliferation of computers, the problem will not go away. Rather, all indicators point to a bright future for the computer criminal. Even the Federal Reserve Board was recently awakened from its long slumber when someone attempted to get unauthorized access to sensitive financial data stored in its computers.

Law enforcement — whether local, state or federal — will tell you that it is currently ill-equipped and lacking in resources to investigate and bring to prosecution white-collar criminals who make use of com-

puter technology. Our judges and juries fare no better. Our criminal justice system, unable to stem the tide of street crime, now finds itself confronted with the electronic criminal.

## Not a Complete Solution

Passage of H.R. 3970 would have solved many of the problems faced by our criminal justice apparatus. Red tape, politics, economics and an army of secular clerics have to date opposed any effort to streamline the legal system.

However, if enacted, H.R. 3970 would have constituted a small but necessary step to bring our criminal justice system into the modern world. The bill would have facilitated the prosecution of those who today employ computer technology to steal with impunity.

Currently, about 16 states have enacted computer crime legislation; a reign of terror has not ensued. Contrary to what some critics of H.R. 3970 have charged, democracy is still with us. In fact, these laws, in serving to deter crime, have given the authorities an added tool with which to

bring the dishonest to justice.

When Congress first enacted the present federal securities laws, its opponents charged that:

- Free enterprise would soon come to an end.
- Prisons would soon be filled with "honest and reputable" businessmen.
- States' rights would wither.
- Democracy itself would be threatened.

However, none of the above has come to pass. Unlike the federal securities laws, H.R. 3970 (and S. 240 before it) was not designed to regulate. It would not have established any regulatory apparatus.

We can spend the next 30 years debating what computer crime is. Criminologists still wrangle over an all-encompassing definition of "organized crime." We can conduct several more studies, which will, save for the fees paid to consultants, accomplish little.

## The Real Threat

The real threat to the business community is twofold. First, there is the cost of computer crime itself. Ad-

mittedly, this is small when compared with some other forms of white-collar crime, yet is growing as the more sophisticated criminal elements make their ways into the arena. Professional criminals, as law enforcement sources will tell us, can learn to circumvent even the best computer security measures.

Second, there is the real threat that failure by the private sector to act will only open the floodgates of regulation in the near future. It will only take one more Equity Funding to provide the needed lodger for the proponents of regulation.

In the late 1920s, the Wall Street community was called upon to take active steps to bring many of the abuses in the financial sector to a halt. Instead, it closed its eyes. The rest is history. The computer industry now faces a similar choice. It can demonstrate responsibility and foresight and act, or it can continue to sweep the problem under the rug. There are those who say it will follow in the footsteps of Wall Street. I say that there is still time.

Bequai is a Washington, D.C., lawyer, specializing in law and technology.

**"If the auto industry had done  
what the computer industry  
has done in the last 30 years, a  
Rolls-Royce would cost \$2.50  
and get 2,000,000  
miles per gallon."**



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industry executive makes so clear). In only thirty years the industry has gone from the development of the giant Eniac system, through the tube-powered, water-cooled Univac 1 (the world's first business computer), to the incredibly cheap, battery-powered microprocessor.



But as unbelievable as the last 30 years have been, the next 30 will probably be even more incredible. In the next two years alone, installed power of

general purpose computer systems will grow almost as much as it did in the previous 16 years. And the supercomputers of the 90's will transfer data at a rate several hundred times faster than even today's speedy computers! It's hard to remember this is real science, not fiction.

This extraordinary increase in efficiency has led to a rapid expansion in computer use, as human ingenuity finds more and more applications for these powerful tools. So the market for computer products and services has turned out to be more elastic than most observers had thought.

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## READER COMMENTARY

# Life On-Line: A Future DP System for Your

What did *Time* forecast in selecting a personal computer as Man of the Year? Will computers replace man? I think not.

Computers, we are reassured, are tools that will make us more productive, resourceful and creative; computers should improve the quality of our personal lives.

With this in mind, I've tried to imagine a home computer system of the future. In the scenario, the computer is the narrator that will guide us through our muddled logic and bad habits. I envision the computer as the glue of our lives, enabling us to cope with what we are stuck with.

The system, called Life On-Line, would incorporate a variety of technologies into an extensive home computer network.

Without getting into the technical specifications and capabilities, Life On-Line would record all activity in the home (audio and video), translate and file digital images onto microchips and, in effect, film the story of our lives.

Through an Inquiry capability, either by typing a request at a terminal or through voice response the recorded incident(s) would be replayed on a display screen or printed out.

The practical applications of such a home computer system would significantly improve the quality of life.

## Offers Order

It has been said that life is what happens while you are trying to figure out what you are doing. The Personal Management features of Life On-Line would offer order to chaos.

Personal priorities could be set via the Order Your Life feature. Either on a daily, weekly or monthly basis, you could designate what you must get done and the order in which you must do the things in question.

For example, over the au-

dio system you could be gently prodded: "Your lawn needs trimming" or "Gee, that laundry sure is piling up." That tiny electronic voice could be just enough to get you in gear.

## Unfriendly Prompts

Prompts could be either friendly or unfriendly, de-

pending on the urgency of the message.

An example of an unfriendly message might be: "Is this a home or a pigsty? Clean up this mess!" This feature could also wake you and remind you of the day's activities: "Good morning sleepyhead. Don't forget to pick up diskettes on the way

home tonight."

Activity Accounting records all the little things you do in unsung fashion: removing the garbage, cleaning the bathroom, putting eggs in the refrigerator and paying the paperboy. Hear-say and rumor to the effect of what a deadbeat you are could be stopped as quickly

as it takes to print an activity report.

Binding Arbitration would enable you to settle personal conflicts (fights, disagreements, arguments and brawls) with mates and children by letting the computer be the referee.

Quite simply, the Binding Arbitration feature could be





Walter Murphy†

# Household That Could Put Your Life in Order

run with a simple query request — for example, "Who's more romantic?" or "What are so-and-sos annoying habits?" The computer would access memory, compile the facts and then make a decision.

This feature might be helpful to couples having difficulties; it could also

bring a strong man to his knees. As a security precaution, this feature would be restricted from use by in-laws, for obvious reasons.

## Child Management

Parental opinions aside, children are too often subject to the whims of parents. The Child Management portion

of Life On-Line would provide the tools to negotiate the complicated agenda of a child's life.

With Parental Pinball, children would be able to forecast decisions prior to the request. This would minimize heartbreak, disappointment and resentment. A child would query a re-

quest — for example: Will dad lend me 10 dollars? — and the computer would

compile the pertinent facts: past lending performance, financial solvency, parental mood, child's current status with parent (good terms/open hostility).

A degree of probability would be computed, en-

abling the child either to go for it or reconsider the request.

A bonus to this feature, Alternative Probability, would also compile a probability for the other parent.

Although Life On-Line would soften the flow of rejection and denial for children, it would also provide parents with facts that could stop a child's illogical rantings ("You never buy me anything" and "You don't really love me").

The Accounting for Your Child feature would quiet even the most obnoxious statements.

This feature would track and record all expenditures spent on your child from prenatal planning on.

For full effect, when your child is ready to leave the nest, an item-by-item invoice (including food, clothing, rent, medical, dental, schooling, entertainment and out-of-pocket expenses) could be presented as a wonderful parting gift and proof positive of just how much you've loved him through the years.

Unruly or disruptive children could be made to get in line through a Playback/Payback feature.

For an insecure adolescent, the threat of embarrassment is usually enough to dummy up any blockhead. Playback/Payback enables the parent to display the most embarrassing moments of a child's life.

Who wouldn't be ashamed to see himself at age four kissing a cousin who later became a nun. This would be followed by the question: "How'd you like your friends to see this?" Peace, and a deeper appreciation of the technology of the future, should descend upon the household.

Murphy is a consultant with a firm in New York.

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# The Driving Forces Behind DP's Evolution

(Continued from Page 41)

decade. This is the microcomputer with its associated impact in providing computing power to a single individual.

Currently in the form of the so-called personal computer or, more precisely, the workstation, the microcomputer is destined to become the ubiquitous information processing device. It will be on every information worker's desk, and it is likely that at least one, if not more, will find its way into the home.

We foresee the force of this tool changing the work processes and habits of organizations as numbers of workstations are brought together at departmental levels, either for purposes of sharing data or for rationalizing communications. In this sense, "communications" connects both electronic mail services and access to data banks in public networks or

from a centralized computer facility.

We can now inherit the legacy of past development: true distributed data processing, which has been spoken of for so long, but never truly realized. To achieve this objective, it is necessary to bring together the facilities of the key developments of each decade and reengineer them for operation within a distributed system.

## Word of Caution

A word of caution should be introduced. Identification of the driving force of this decade should not lead us to ignore the maintenance and development of mainframe and mini-computer activities just because there seems to be a current flair for the micro.

Vendors and users both know that despite the flurry of activity around microcomputers and the large numbers of them now being introduced, the major portion of the DP budget is still associated with mainframe computing.

The message, therefore, is that the driving force must be understood in perspective — against the entire development of computing — so that it will become an integral part of future data processing solutions.

## Users' Demands

In this sense, we can fully expect that users will demand the following of their DP suppliers and installations:

- Intelligent-based, local comput-

ing support: one user with one workstation.

- Applications that are appropriately configured to operate in a tiered environment of individual, departmental and organizational scope.

- Automatic access and flow of data within the distributed elements of the system.

While the past and present give us a reasonable picture of the driving forces shaping the path of computing, it is difficult, if not impossible, today to conceive of what the important focus will be 10 years hence. Where will we go next?

Frank is an independent consultant and president of the Werner Frank Computer Group located in Calabasas, Calif.

## LETTERS

### It's Yours If You Paid for It

As a contract programmer, I have read with interest your reader commentaries that cover the subject of preparing DP contracts and the question of program ownership. [John J. Marcellino and John M. Conley's "Negotiate Contract Clauses at the Beginning" [CW, March 21]; Leslie Stager's "Prepare Before You Negotiate a DP Contract" [CW, March 21]; and Roland K. Bown's "Who Owns Software Written Under Contract?" [CW, Feb. 7].

The issue of software ownership has never arisen for me simply because what I sell are my programming and analysis skills. I do not sell programs.

Most of what I have done is not of any use to anyone but the person for whom the job was done. If a contract programmer is given assignments that are only parts of a larger system, he usually won't have anything else to sell.

In the four years in which I have done contract programming, I have yet to get a written contract. I have had verbal contracts, purchase orders and only one nondisclosure agreement, which was signed after the completion of the job.

I take the view that the program belongs to the people who paid for it to be written; the techniques and skills belong to the programmer. A carpenter possesses his tools and his craft; the house he built and its blueprints belong to the man who paid for the house to be built.

Joseph A. Petrosky  
Programmer/Analyst

Bolton, Mass.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters may be edited for purposes of brevity and clarity. Letters should be addressed to Editor, Computerworld, 375 Cochituate Road, P.O. Box 880, Framingham, Mass. 01701.

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## Traditional Model Of DP Structure Seen Outdated

Special to CW

NEW ORLEANS — The increasing decentralization of the DP organization will force the management information systems (MIS) manager to turn to a new organizational structure and a new methodology, said John F. Rockart, director of MIT's Center for Information Systems Research.

As keynote speaker for the International Conference on Computer Capacity Management here recently, Rockart likened the traditional model of the DP organization to industrial sales. "There was one major customer for one major product." Now there are terminals on every desk, making it more similar to retail sales, he explained. Even more decentralization is on the way, he warned, and the role of the information systems manager must change also.

The originator of the concept of critical success factors (CSF), Rockart noted that his center studied nine organizations and interviewed each top MIS executive to determine today's CSFs. Based on this study and other research, he formulated three eras of information systems growth. In the first era, when DP was focused on accounting during the 1950s to the 1960s, DP had its people and hardware in one place, and the users came to the DP manager. Sometime during the 1960s, a new era began, driven by new applications.

"In the second era, we found out two things about operational systems: operations people have to know the status of things right now," he explained. Secondly, they were working with local data bases. Hardware went from large, centralized computers to decentralized local minicomputers.

(Continued on Page 52)

## 'Corvet' Generates Cobol, Runs on IBM OS/VS, DOS

MINNEAPOLIS — Analysts International Corp. (AIC) has unveiled an application generator for IBM 4341 and larger systems running under OS/VS and DOS. It will be introduced next week at the National Computer Conference in Anaheim, Calif.

Written in Cobol and designed to generate Cobol, the package, called Corvet, works in an IBM BSM environment and initially will interface with Cincom Systems, Inc.'s Total and IBM's IMS data base

management systems and IBM Vsam files. Because it was developed on Data General Corp. equipment, the software also will run on DG's MV/6000 and MV/10000 systems.

Victor Benda, senior vice-president of AIC, said this product differs from existing application generators because it enables nonprogrammers to develop fully production applications without intervention from the management information systems (MIS) staff until the final stages.

The Corvet user is queried by the system through all stages of application development, Benda said. Initially, the user is asked to lay out the essential data flow of the program. This includes a half-dozen symbols, such as process and decision boxes and references to procedures. Once this is completed, the system does consistency checks for problems such as loops.

The user is then asked from where the inputs to the system will come. He labels each process box appropriately with symbols for card files, terminals and tape reels and includes a tape description. The user then describes the data itself in terms of type of data (alphanumeric, numeric), field length, decimal information and where it is going. The user is then asked to describe the relationship of the information to determine how it will be accessed.

### Tutorial Technique

Corvet's tutorial technique questions the user methodically until everything is resolved, Benda said. The same technique is used to describe screen input and reports. Before the generated code is put into production, the DP professionals review data structures for efficiency and gauge the impact on performance.

The \$93,000 fee for Corvet, which will be available in July, includes one year of support and a Tektronix, Inc. 4112A black-and-white terminal with a microprocessor and a diskette. Benda explained that the Tektronix terminal was chosen because it is compatible with the IBM 3270 and supports the graphics needed for flow diagrams. Subsequent releases of the package can be used with the IBM Personal Computer instead of the Tektronix terminal.

Further information about Corvet is available from AIC, 7615 Metro Blvd., Minneapolis, Minn. 55435.

## Utilities Target VM-Based Systems

SUNNYVALE, Calif. — Dovetail Systems, Inc. has announced two software packages for IBM and plug-compatible VM-based systems.

BackupV, an IBM CMS-based automatic backup system, provides a means to preserve CMS minidisks in a VM/370 or VM/SP system. The system is said to address the problems of operator inconvenience and backup catalogs.

TapelibV, also CMS-based, is an automatic library management system that is said to maintain a catalog of all tape volumes allocated to CMS users. The systemwide library reportedly manages tape drive allocation, user ownership of volumes, ownership by data set name and read-only and read/write access to users' tapes.

Each package costs \$4,980, or \$8,983 for both from the vendor at 1030 W. Maude Ave., Sunnyvale, Calif. 94086.

## Bill of Material System Offered

ATLANTA — American Software, Inc. has released an on-line bill of material system for IBM 30 series and 4300 series and plug-compatible mainframes running IBM DOS, OS or MVS operating systems.

The system includes prompts and menus explaining all bill of material functions, a spokesman said. Users have on-line access to single-level explosions and impositions of data as well as details re-

garding a single component's relationship with its parent.

A copy feature offers the ability to copy a bill's structure to a similar parent, then make modifications and submit a new item. A "delete all" function allows batches of old bills to be eliminated from the system.

The package starts at \$28,000 from 443 E. Paces Ferry Road, Atlanta, Ga. 30305.

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## For OS/VS1, MVS, DOS/VSE Security Added to 'Com-Plete'

RESTON, Va. — Software AG of North America, Inc. has announced Version 4.3 of its Com-plete time-sharing system for IBM OS/VS1, MVS and DOS/VSE operating systems.

The new release includes Com-pass, a parallel activity and security system, said to provide multiple levels of parallel program execution

at each terminal in the system. Com-pass allows several programs to be worked on simultaneously.

Security features permit a detailed profile of allowed programs and utilities to be associated with each authorized user of Com-plete, including an automatic start-up transaction, a spokesman said. The enhancement also

includes a new program editor, an on-line help facility and a message-switching and storage facility for communications between users, the spokesman said.

The new release is free to existing customers. The purchase price starts at \$50,000 for the DOS/VSE version from 11800 Sunrise Valley Drive, Reston, Va. 22091.

## Candle Enhances Omegamon, Dexan to Support IMS, MVS/XA

LOS ANGELES — Candle Corp. has announced plans to support an external monitoring mode for its Omegamon/IMS and Dexan/IMS products for monitoring performance of IBM's IMS.

The company reportedly also enhanced its Omegamon/MVS and Dexan/MVS performance monitoring software to support IBM's

MVS/XA operating system.

In the external monitoring mode, Omegamon/IMS and Dexan/IMS monitor IMS from their own address space rather than from inside the address space of the IMS control region, a spokesman said.

No virtual storage within the IMS private area is needed, and installation and

maintenance of the performance monitors are simplified.

The enhancement is available at no charge to current users running MVS/SP 1.3 and will be available as part of Version 200 of the IMS products to be released this quarter. Omegamon/IMS and Dexan/IMS each cost \$19,500.

Support for the new MVS/XA features includes displays of device I/O queues, lock control unit and channel path statistics, maps of virtual storage above 16M bytes and displays of new MVS/XA control blocks, the spokesman said. The package includes improvements to the automatic exception analysis, a control block dumping facility, a user parameter module, authorized cross-memory and improved ease of installation, according to the spokesman for the firm.

CPU's that were licensed for Omegamon/MVS and Dexan/MVS before July 15, 1982 will receive the support at no additional cost. Each package costs \$19,500 from Candle Corp. at Suite 2404, 10680 Wilshire Blvd., Los Angeles, Calif. 90024.

## Graphics Kit Introduced

TORONTO — Dataplotting Services, Inc. has announced a graphics subroutine library for use in Digital Equipment Corp.'s VAX/VMS, Prime Computer, Inc.'s Prime and IBM's MVS operating environments.

D-Pict/Virtual Graphics Language (D-Pict/VGL) is said to be a modular, user-oriented computer graphics system for use by application programmers.

Written in Fortran 77, D-Pict/VGL is priced at \$8,000. The vendor is located at 225 Duncan Mill Road, Don Mills, Ont., Canada M3B 3K9.

## 'SAS/Graph' Upgraded To Support IBM Micros

CARY, N.C. — SAS Institute, Inc. has enhanced its SAS/Graph graphics software system to support the IBM Personal Computer when used as a terminal connected to a host computer.

Three versions, supporting 25 by 80 or 25 by 40 character screen with 200 by 640 or 200 by 320 resolution in monochrome or three-color models, are provided. Graphics files can be recorded on disk and replayed later using a program supplied by SAS.

To generate displays on the IBM Personal Computer,

users must be running SAS and SAS/Graph on an IBM 370, 30 series or 4300 series or compatible mainframe. The Personal Computer requires 64K bytes of memory, a color/graphics monitor adapter, asynchronous communications adapter and asynchronous communications support.

SAS is available for a first-year license fee of \$7,500. SAS/Graph costs \$5,000 for a first-year license fee. SAS can be reached through Box 8000, SAS Circle, Cary, N.C. 27511.

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## New Organizational Model Seen Key to Growing Decentralization

(Continued from Page 49)

The proliferation of decentralized minis was facilitated by decreasing costs of hardware. However, Rockart observed that IBM continued to treat the world as if all applications were of the accounting era-one type. In this regard, the vendor missed the shift to the second era. MIS had become a

matrix management function rather than a direct management role, and the MIS manager had to sell and persuade rather than tell DP people what to do.

"We lost lots of heads of MIS at this juncture," he said. "Those who were good supervisors but lousy executives couldn't make it."

In the third era, account-

ing and operations are still present, he said, but there is a third wave of applications that are entirely new. These relate to communications and information. They relate to decision support systems, executive support systems and telecommunications.

"None of these areas has good paperwork proceeding in place at this time," he said, and applications development is evolutionary because no one knows what the application will look like at the end. The programmer essentially develops a prototype and asks the users if this is what they want. Changes are made, and it evolves.

"There is no hard justification for this process. It has to come from the budget," according to Rockart, who added, "Capacity management is difficult; we can't do business as usual."

### Inappropriate Applications

He focused on the proliferation of end-user applications for which use of Cobol is not appropriate and which therefore depend on the use of fourth-generation languages. "They can be used by end users, and they rely on relational data bases," he said. "Since they are used by amateur end users, they can burn up a lot of corporate resources without doing anything at all."

DP professionals naturally are concerned about the efficient use of resources and about giving end users access to corporate resources. They are also concerned about whether these applications will work. He pointed to another aspect: "What if they work? Does this signal the end to the need for systems developers?"

Applications of the first and second era type are growing at a rate of about 10% to 15%, Rockart said.

Third-era-type applications have a totally unpredictable — but high — growth rate; 50% is the lower limit.

"There could be a 50% to 100% growth rate in (million instructions per second (Mips)) devoted to type-three applications," he added, noting that currently about 50% of Mips are for type-three applications during the day (about 30% to 50% overall).

"What will it be like in 1990?" he asked.

With the growth rates he has found, it is conceivable that 75% to 80% of Mips would be used for end-user applications.

This is three times as great as the percentage for accounting and operations applications.

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## For CICS-Based Systems 'Guardian' Gets Update

FORT LEE, N.J. — On-Line Software International, Inc. has announced enhancements to its Guardian on-line security system for IBM and plug-compatible CICS-based systems.

The enhanced system restricts activity on the basis of transaction contents without the need for application program changes, a spokesman said. If an unauthorized command is entered, Guardian prohibits further activity. The enhancement also offers protection of IBM Vsam files and data bases on the basis of file contents.

The system allows authorization

to be updated on-line and security rules can be modified or added on-line to take effect permanently or temporarily, the spokesman said. The security system is available for IBM and plug-compatible mainframes and supports CICS for both IBM OS and DOS operating systems. Guardian offers protection for all transactions, programs, files, terminals and IBM DL/I and Cullinet Software, Inc. IDMS data base management systems, according to the vendor.

The package costs \$20,000 for DOS or \$27,500 for OS for On-Line Software International at Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

## ADR Ties MSA Packages To ADR/Datacom

PRINCETON, N.J. — Applied Data Research, Inc. (ADR) has announced the availability of Management Science America, Inc.'s (MSA) financial and human resource systems using the ADR/Datacom system.

The ADR/Datacom system is said to provide a relational data base management system designed for on-line applications that must meet high-volume activity and rapid response time requirements.

The MSA products have been tested with the ADR/Datacom system using ADR's Vsam transparency facility, said to enable application programs originally written to access Vsam key sequence data sets to access data base files without program modification.

The ADR/Datacom data base and Vsam facility for an IBM OS environment costs \$83,000, and for a DOS environment, \$67,900. For IBM 4321, 4331, 370/125 and 370/135 DOS environments, the products cost \$50,900, a spokesman said from Rt. 206 & Orchard Road, CN-8, Princeton, N.J. 08540.

## Screen Tool Uses 'Painting'

ATLANTA — Datacan America, Inc. has introduced a data management software system designed for business executives.

Enter/Scan features screen "painting," which allows the user to design screen formats and define data fields for information input. The Enter/Scan user "paints" the desired entry fields onto the input screen and develops a screen format. Once the format is established, the user defines each data field by completing a data definition menu. As each data field is defined, it is automatically entered into a dictionary, according to the vendor.

Enter/Scan runs on the IBM System/34 and on Datapoint Corp. systems. Prices for Enter/Scan range from \$1,000 to \$6,000.

More information is available from Datacan at Suite 222, 4675 N. Shallowford Road, Atlanta, Ga. 30338.

## Dyl-Audit Release 3.0 Offers Linear Regression

GRANADA HILLS, Calif. — Dyl-Audit, Inc. has announced Release 3.0 of Dyl-Audit, its auditing system for IBM mainframes, which operates in either free-form, English-like syntax or fixed-form, parameter-driven formats.

The release reportedly offers linear regression and trend line analysis. Dyl-Audit calculates regression line coefficients, standard error of estimate, correlation coefficient, coefficient of determination and coefficient of nondetermination.

Integer, decimal and negative exponentiation is now supported. Letter-writing capabilities have been enhanced, enabling the user to spec-

ify a range of detail lines to be printed within the body of a letter. The print size of an edited amount field can be specified, and letter-writing logic has been optimized.

Release 3.0 is free to current customers. Dyl-Audit costs \$1,272 annually on a three-year lease. DYL-260 and DYL-280 report writer/data management/utility systems, which support Dyl-Audit, are priced at \$1,680/year on the same plan. All products are available for IBM OS, DOS, CMS and SSS systems on IBM 360, 370, 30 series, 4300 series and plug-compatible hardware from Dyl-Audit, 17418 Chatsworth St., P.O. Box 3010, Granada Hills, Calif. 91344.

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# 'Omnicalc' Spreadsheet Program Gets Update

IRVINE, Calif. — Tower Systems, Inc. has announced a new release of its Omnicalc spreadsheet program for IBM CICS users. Omnicalc features a user-defined matrix for entering alphanumeric data with the associated program automatically updating all affected values as changes are made on the screen, a spokesman said.

The new release features multidimensional display support that adds a depth dimension to the matrix. Up to 255 planes of data may be defined and accessed. Each plane has its own spreadsheet, allowing similar applications to reside within the same matrix or cumulative totals to be gathered across applications, the company claimed.

Other enhancements include an expanded matrix size with more lines and columns and over 32,000 data entry cells. Numeric support has been expanded up to five decimal places on a global or cell-by-cell basis. Users may predefine the size of the matrix using a single command. Windowing allows the user to view more than one screen's worth or plane's worth of data.

A data base interface loads a new or existing matrix with any data, the spokesman said. User-defined profile support enables each user to define personal attributes such as programmed function key definitions and default matrix size. Redefinable hardware keyboard keys also allow Omnicalc to include password pro-

tection for individual matrices, as well as data encryption for the information they contain, according to the company.

Other new functions include user messages, program callable commands, cell indexing and GOTO

statements. On-line Help screens are provided.

Omnicalc is available on IBM or compatible mainframes running IBM's DOS/VSE for \$1,999 until the end of May from 19782 MacArthur Blvd., Irvine, Calif. 92715.

## Screen Painter Package Aids Prime Cobol Programmers

HOUSTON — Interactix, Inc. has announced the availability of a screen painter package called Special Module for Application Screen Handling (Smash), said to enable Cobol programmers on Prime Computer,

Inc. computers to develop on-line programs at an increased rate.

Smash reportedly can generate a complete on-line master file update of a Cobol program in minutes. From a standard Cobol "FD" file layout, Smash generates an internal data dictionary using the supplied picture clause for each individual field, the vendor said.

The programmer can then "point" a screen while Smash, using the data dictionary, generates complete Cobol coding for the display, acceptance and off-line printing of fields on the screen, including single-layer sub-scripted fields. The generated Cobol code is loaded into the program via the standard copy statement.

Other features include generation of a complete program allowing up to five secondary keys: individual printing of screen images; adding, changing, deleting and browsing through records in a file; and automatic validation and decimal alignment of numerically defined fields.

Smash is available for a one-time license fee of \$5,000, the vendor said from 7203 Marisol, Houston, Texas 77063.

## Accent R Version Updated for DEC

CUPERTINO, Calif. — National Information Systems, Inc. has announced Version 7.30 of Accent R, a fourth-generation language for Digital Equipment Corp.'s Decsystem-10 and 20. Also unveiled was the first release of the Accent R Host Language Interface (HLI) and Menu, a system for developing interactive menu-driven writing programs.

Version 7.30 reportedly includes Qrep, a question/answer quick report writer, and offers interfaces to Marc Software International, Inc.'s Muse word processing system; SPSS, Inc.'s SPSS statistical system; Nypian, Inc.'s Nypian electronic spreadsheet; and National Computer Performance, Inc.'s Calc electronic spreadsheet.

The HLI reportedly enables upgrading of applications written in Cobol, Fortran or Macro to take advantage of the capabilities of Accent R. Existing applications can be upgraded by replacing data access routines with Accent R calls.

Menu reportedly allows an unlimited number of menus to be linked together to form a system.

The HLI costs \$10,000/license. Menu costs \$2,000, and Version 7.30 is free to existing installations with active maintenance contracts from Suite 1330, 20370 Town Center Lane, Cupertino, Calif. 95014.

## Unibase has 10X the power of conventional databases...plus UNIX software.

Uniq Computer Corporation introduces Unibase, a powerful new concept in database management. More than a conventional software-based system; more than a single, limited use computer. Unibase combines the best of several worlds to give you a system that is truly unique.

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### What exactly is Unibase?

Unibase is a complete relational database system, a combination of software and hardware. It consists of two processors, a host and a back-end. The host is DEC's powerful 32-bit VAX running UNIX System III while the back-end processor provides the real horsepower for handling data management functions. The complete integrated system can be combined with up to 63 additional hosts to form a shared-access database network.

### More unique features.

Unibase systems can communicate with the IBM HASP and JES subsystems for mainframe data sharing. The system includes an interactive query language—QEL, the Easy-Write report writer, and programming language libraries. Database features include the advanced relational data model, transaction logging, multiple security levels, and hardware self-diagnostics.

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## "Titus" Serves Honeywell System

# Technalysis' Packages Extend Power of TPS 6

FALLS CHURCH, Va. — Technalysis Corp. has released two utility packages said to extend the power of Honeywell, Inc.'s transaction processing system (TPS) 6 on Honeywell's Level 6 or DPS 6 computers.

Technalysis Integrated TPS 6 Utility System (Titus) is a general-purpose data base administrator utility that provides any TPS 6 user with absolute control over his TPS 6 Integrated File System data base, a spokesman said. Titus assists in creating and loading controlled, low-volume test records from any screen.

On-line inquiry and modification is allowed on any record, file or chain during the verification phase of program testing. Titus walks data base chains at the screen. If any broken chains occur during program test, the package helps locate and fix the problem without releasing the entire file.

TPS 6 Utility Report Facility (Turf) is a general-purpose menu-driven report writer that leads users through the creation of their reports. Turf prompts for field selection, processing and format requirements, the

spokesman said.

Once the report has been saved, the user can direct Turf to run a report immediately or later. The output print file can be directed by the user to hard-copy print or browse at the screen. The user can perform arithmetic operations, break control subtotaling, cross footing,

sorting, automatic report formatting and special flag processing.

Titus and Turf run under Honeywell's Gcos 6 MOD 400 operating system and TPS 6. A one-time licensing fee is \$10,000 for Titus and \$8,500 for Turf from Technalysis, 7700 Leesburg Pike, Falls Church, Va. 22043.

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## SCS Data Base Library Backs Nova, Eclipse

BELLEVUE, Wash. — Small Computer Systems, Inc. (SCS) has introduced A Database Library (Adlib), a series of software products designed to support hierarchical, shared data bases and high-transaction throughput on Data General Corp. Nova and Eclipse systems running under DG's Rdos.

The product line includes the following:

- Adlib — a high-level, dictionary-driven, data base programming language compiler.

- Window-Mapped Adlib Executive (WAX) — an extended memory executive.

- Mapped Adlib Executive (Mulex) — a smaller executive for mapped systems without extended memory

that will run in standard Rdos 64K-byte address space and support up to four printers and any number of terminals.

- Multitask Interactive Text Editor (Mite) — a word processor for editing programs and documentation that can be used on either executive or any terminal.

Also, numerous applications such as Wholesale Distribution and Material Requirements Planning are available under Adlib.

A minimum runtime package costs \$3,000; a minimum development package costs \$6,000, the vendor said from Suite B-48, 13400 Northrup Way, Bellevue, Wash. 98005.

## VAX-11 Version of 'This' Released By Tymshare

CUPERTINO, Calif. — Tymshare, Inc. has released a Digital Equipment Corp. VAX-11 version of its International Banking Information System (Ibis).

Ibis is an on-line trading system that the vendor claims is fully integrated with a bank's international operations.

International finance areas covered include foreign exchange, money markets, commercial loans, precious metal trading, general ledger, central information file, letter of credit and financial futures.

Other areas are the Complex Systems, Inc. Chips and Swift systems for tracking paying and receiving and the Voetro/Nostro system for demand deposit accounting. Each module can function independently or all can be operated on a fully integrated system, the vendor said.

Ibis maintains and tracks information relevant to the global position of a bank's clients in the areas of money markets, foreign exchange, commercial loans and letters of credit. It provides instant credit limit positions and on-

line yields, according to the vendor.

The modules cost from \$100,000 to \$200,000 from Tymshare, located at 20705 Valley Green Drive, Cupertino, Calif. 95014.

## List Profiles Net Packages

CHERRY HILL, N.J. — Data Decisions, Inc. has released a directory that profiles 317 communications and networking software packages from 81 vendors.

The directory includes packages offered for all major mainframes and minicomputers as well as for major business microcomputers.

The survey covers local and remote terminal-configuration planning programs, teleprocessing monitors, screen development aids, access/security control facilities, remote job entry software and network design/analysis/control packages.

The directory (Report 6-BF) costs \$25 from Data Decisions, 20 Brace Road, Cherry Hill, N.J. 08034.

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## Micronotes

Information Builders, Inc. has unveiled a version of its Focus data base management system and fourth-generation language for the IBM Personal Computer. Called PC/Focus, the package is said to offer identical functionality in both its IBM mainframe and Personal Computer versions.

PC/Focus will be released in three stages, beginning in spring 1983. The first version includes a report generator, dialogue manager, Focus file browsing capability, user vocabulary, Help facility, text editor and file transfer facility. The second version, targeted for summer 1983, will add the Fidel Full-Screen Manager, data base management and graphics capabilities. Set for fall 1983, the third version of the product will add formal statistical analysis, financial modeling and distributed processing functions. PC/Focus is said to enable multiple users to access and/or update a mainframe-

stored data base simultaneously.

PC/Focus is supplied as a combination of software and the PC/Focus Accelerator Board, which provides an additional 512K bytes of random-access memory (RAM). It requires at least 256K bytes of RAM and a hard disk of at least 544-byte capacity. If the Intel Corp. 8087 chip is installed in the user's Personal Computer, the system will automatically make use of it to increase the speed of heavily arithmetic reports.

PC/Focus will be available June 1, priced according to current configuration and quantity. For users that have mainframe Focus installed, the price for one copy is \$2,200 plus \$750 for the accelerator board. For nonusers of mainframe Focus, the price is \$2,600 plus \$750 for the board. Quantity discounts are available; the vendor said from 1250 Broadway, New York, N.Y. 10001.

North America Mica, Inc. has announced the availability of its Critical Path Project Management and Resource Management Systems. PMS-II and RMS-II, on 16-bit microcomputers running under the Digital Research, Inc. CP/M 86 operating system in the CBasic-86 language. The software will schedule projects based on 3, 4, 5, 6 or 7 workdays per

week; start on any day of the week omitting up to 100 user-defined holidays of any length; maintain budget and actual costs; and report the project on an "actual start/finish," "percent complete" or "days remaining" basis. PMS-II costs \$1,295, and RMS-II costs \$995 from Suite 100, 11772 Sorrenio Valley Road, San Diego, Calif. 92121.

## Video Tape Presentation Teaches 'Visicalc' to Users

NEW YORK — Micro Learning Concepts, Inc. has introduced "Learning Concept: The Visicalc Program," a video tape learning presentation designed to teach microcom-

puter end users how to set up and utilize VisiCorp's Visicalc package in less than an hour.

The 58-min. tape guides the user through the Visicalc program step by step. In addition, there is a 32-page Quick Reference Guide which contains reference charts and in-depth summaries of all Visicalc commands.

The video tape for the Visicalc program is comprised of three segments. The initial segment familiarizes the user with the IBM Personal Computer and explains preparation of the Visicalc program and data files.

The second segment teaches the user to build a simple spreadsheet. The final segment teaches how to modify a simple spreadsheet to exact specifications.

The full package, including video tape and reference guide, retails for \$129.95; the vendor said from Suite 530, 120 E. 56th St., New York, N.Y. 10022.

## Project Tool Fits HP 3000 Series

SANTA CLARA, Calif. — Computer Resources, Inc. has announced that its computerized project management system, Projectalest, is now available for Hewlett-Packard Co. HP 3000 series computers operating under the Multi-Programming Executive operating system.

Designed around a relational data base management system for use by nontechnical personnel, Projectalest reportedly is completely menu driven and provides an automatic system for planning, scheduling, monitoring and controlling all types of project.

Features include on-line data entry, resource allocation, cost and labor tracking, color graphics, Gantt charts and network libraries. The basic system is available at an introductory price of \$12,000; the vendor said from 5333 Bayview Drive in Santa Clara, Calif. 95054.

## Braegen's Way Puts True 16-Bit Personal Computing Inside A Low-Cost, 3274-Compatible Cluster Controller.

Several companies now offer personal computing capability as part of their 3270 terminal package. Their approach, however, has built-in problems—primarily because the personal computing is built-in, but just bolted on.

Braegen's way works better. Because our new 8410 Cluster Controller features integral personal computing, the user gets maximum processing versatility and performance while the DP Manager gets maximum control and cost savings.

**More Versatility And Power.** You can attach up to eight ergonomic display stations to the 8410—and with one keystroke turn them all into true 16-bit PCs. You

can access a wide range of applications software operating under MP/M-86. And you can upgrade from 128 to 640 Kb of RAM—or integrate a 10-Mb Winchester drive for optimum multi-user response and security.

**More Control And Economy.** Undoubtedly, it is the control you gain and the dollars you save that really distinguish the 8410. Because the PC capability is integrated into the controller, each user is tied into the overall corporate communications network—giving the DP Manager control over critical computer resources.

Just as important is the considerable cost control achieved. First, the 8410 starts as a more cost-effective alternative, even operating only as a 3274 remote cluster controller. But by adding multi-user PC capability, the 8410 can save you thousands of dollars—and a lot of space—in equipment alone. There's no investment in additional software for each workstation, or in additional communications lines. Expensive resources—such as letter-quality printers and Winchester drives—can be shared. And a unique remote-maintenance feature that lets our Field Engineers dial up and diagnose the 8410 from any location reduces down-time costs.

For ten years now, Braegen's way has worked for an impressive base of customers. The 8410 with integral personal computing; its low-cost counterpart, the 8400 Remote Cluster Controller with up to 16 attachments; as well as our nationwide sales and service network are just three persuasive reasons why.

Put Braegen's way to work for you. Call or write The Braegen Corporation, 20740 Valley Green Drive, Cupertino, CA 95014 (408) 725-1253, TWX: 980-338 7332.

# BRAEGEN



# Developers Can't Deliver, Exec Says Videotex/Teletext Assailed for Promises

By Phil Hirsch

CW Washington Bureau

NEW YORK — Videotex/teletext developers have promised far more than they can deliver, according to Dr. Walter Ciciora.

Ciciora, who spoke at a videotex/teletext seminar here, is vice-president for research and development at American Television and Communications, Inc.

He has been suggesting for a long time that the videotex/teletext standards battle is based more on a struggle for market share than on technical necessity. By installing conversion software in network gateways, he explained, terminals designed for one standard can communicate with data bases implementing the other standard.

At last week's seminar, which was sponsored by Technology Transfer, Inc., a Santa Monica, Calif., telecommunications consulting firm, Ciciora said cable TV networks are unlikely to offer two-way videotex services for years. The videotex system being touted by AT&T costs far too

*'Although Federal Communications Commission rules state that all new cable TV systems must have two-way "capability," no one is manufacturing the equipment needed to put two-way systems on the air... That is because most cable system operators are heavily in debt.'*

much to become a mass market product, and broadcast teletext is not viable either, he commented.

Regarding the prospects for operating videotex services on cable networks, Ciciora pointed out that less than one-quarter of one percent of all U.S. cable TV networks now provide two-way service. In five years, it will be no more than 6%, he said, adding that the development of commercial services that require two-way cable networks is rather unrealistic.

Although Federal Communications Commission rules state that all new cable

TV systems must have two-way "capability," no one is manufacturing the equipment needed to put two-way systems on the air, Ciciora reported. That is because most cable system operators are heavily in debt, according to attorney Richard Neustadt, another speaker at the seminar.

Regarding broadcast teletext, Ciciora said the services now being offered by CBS and others do not have enough information storage capacity. That is because they use the "vertical blanking interval" — the space separating the frames of a standard TV program. This scheme limits the teletext data base to about 150 pages, he pointed out.

Using a full TV channel — cable of either — allows expansion of the data base to about 5,000 pages, Ciciora explained. But there is another problem. Teletext will

(Continued on Page 64)

## Distributed Processor Unveiled For Smaller Sperry 1100 CPUs

BLUE BELL, Pa. — Sperry Corp. has unveiled a distributed communications processor designed for smaller Sperry Series 1100 host computers.

The DCP/10 is also said to function as a low-cost network processor or remote concentrator. It is capable of simultaneously supporting transaction processing, time-sharing, remote job entry and distributed processing applications, a spokesman said. The memory for the unit is an integrated, error-correcting storage system of 512K bytes.

Three main components make up the DCP/10 hardware: a processor, local storage and communications lines modules. They come together in a 19-in. enclosure that can be mounted in an existing communications cabinet or delivered in a cabinet tailored for the DCP/10.

It accommodates asynchronous system communications and wideband transmissions at speeds up to 64K bit/sec.

A DCP/10 used as a front-end proces-

sor, including three synchronous lines, four asynchronous lines, 512K bytes of storage, a freestanding diskette storage subsystem and a host interface channel costs \$33,542. The five-year lease terms are \$768/mo. plus monthly maintenance of \$183. The unit will be available during the first quarter of 1984.

Sperry Corp. is located in Blue Bell, Pa.

## Sytek Adds Localnet Monitor

MOUNTAIN VIEW, Calif. — Sytek, Inc. has announced a statistical monitor that is said to provide network managers with digital, analog, interface and power data for monitoring a Localnet channel.

The Localnet 50/120 statistical monitor is for managers who use Sytek's multi-channel broadband local-area network. It is said to analyze data traffic on a single channel — one of 120 — of the Localnet network. Using the monitor, managers

will be able to observe traffic statistics on the system, monitor network conditions and optimize network traffic, Sytek said.

The Localnet 50/120 is a passive device that connects to the network via an RS-232C interface, either as a stand-alone device or in conjunction with the Localnet 50/100 network control center.

The monitor sells for \$1,895 from the vendor at 1225 Charleston Road, Mountain View, Calif. 94043.

## Tymnet Certifies Eight X.25 Products

MIAMI BEACH, Fla. — Tymnet, Inc. has announced the certification of eight X.25 products that meet the qualifications of Tymnet's certification program.

The vendors whose X.25 products are newly accepted by Tymnet are: Computer Sharing Services, Inc.; Micom Systems, Inc.; the University of Utah; Wang Laboratories, Inc.; Xerox Corp.; Associated Computer Consultants, Inc.; Memotec; and Gandalf Data, Inc.

Tymnet is located at 2710 Orchard Pkwy., San Jose, Calif. 95134.

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## Software Routine Provides Security for HP Terminals

KELLER, Texas — Related Computer Technology (RCT) has unveiled Bouncer/3000, a software routine said to provide log-out control of all terminals in Hewlett-Packard Co. HP 3000 systems, to eliminate automatically interruptions during backup sessions.

The routine reportedly recognizes users who are authorized operators, while warning unauthorized personnel against continued use of the system. Automatic abort takes place following the warning if proper authorization is not shown.

A demonstration tape of Bouncer/

3000 is available for \$100, and a source tape of the program costs \$1,000, according to the vendor. RCT is located at 154 S. Main, Keller, Texas 76248.

## Data Entry System Updated

PRINCETON, N.J. — Mathematica Products Group, Inc. has announced enhancements for its on-line data entry system.

Enhancements include the elimination of repetitive keying through advanced support of the "Dup" key, format copying for multiple uses of developed screens and enhanced security including the ability to modify

ANAHEIM, Calif. — Sigma Information Systems has announced the SCD-DZV11, a dual-width asynchronous eight-line multiplexer for Digital Equipment Corp. LSI-11 Q-bus systems.

The multiplexer can support RS-232C terminals or remote lines and

previously assigned security codes at any time, the vendor claimed.

The system is designed for full-screen automatic data entry using IBM 3270-type terminals and for IBM mainframe computers in the DOS, DOS/V5 and DOS/VSE environments. DES costs \$8,000 or \$208/mo for 60 months from the firm through P.O. Box 2392, Princeton, N.J. 08540.

plugs directly into the Q-bus slot in a LSI-11, the vendor said.

The multiplexer emulates the DEC Unibus DZ11 eight-channel multiplexer and has jumper-selectable address and vector assignments. The SCD-DZV11 has modem control and programmable speed for character length and stop bits, the vendor said. Included with the SCD-DZV11 are two cables with 60 pin berg to four 25 pin RS-232C female connectors, the vendor said.

The SCD-DZV11 costs \$715. The vendor makes other LSI-11-compatible products including disk controllers, print controllers, multifunction boards, communications interfaces and system enclosures. The vendor is located at 6505 Serrano Ave., Anaheim, Calif.

## Videotex Hit For Pledging Too Much

(Continued from Page 63)

not be able to reach a mass market until somebody comes up with a decoder priced at no more than \$50. The British are closest to this goal, he said, but they are still far from it.

According to Ciciora, a decoder implementing the Prestel display format can be purchased in this country for \$300 to \$600. Also, the British system provides poor graphics, and that is likely to discourage advertisers whose participation is necessary if teletext systems are to turn a profit.

AT&T's Presentation Level Protocol (PLP) display scheme provides handsome graphics, but the decoder costs far more. It appears that it will be some time before PLP decoders become cheap enough to support the kind of market the phone company has been talking about.

AT&T, in collaboration with Knight-Ridder Newspapers, is scheduled to begin offering a commercial videotex service next fall in Miami that will feature PLP-based terminals. Gary Arlen, who publishes a newsletter devoted to videotex/teletext, said at the seminar that AT&T's PLP decoder will be sold to viewers for \$995, but is costing the phone company an additional \$500.

Ciciora claimed the gap is even larger. He reported that Norpak, Ltd., a Canadian manufacturer, is now producing a decoder that uses circuit boards rather than silicon to implement PLP, and the price is \$1,500 per unit.

Ciciora said he recently obtained the following price quotes from one manufacturer who is planning to build chip-based PLP decoder later this year: For the first 5,000 units, the price will be \$1,250 each; for the next 5,000 to 10,000 units, \$800 each; and for the next 10,000 to 100,000, \$550 each.

Aside from high decoder costs, telephone-based videotex services face the prospect of rising communications charges. Ciciora said. Metered local telephone service, now established in some cities, will almost certainly spread as the divested Bell operating companies seek new sources of revenue, he pointed out. By comparison, cable-TV-based systems offer free transmission.

**Student Opinion Form**

Course Name \_\_\_\_\_

Course Number \_\_\_\_\_

Course Ending Date \_\_\_\_\_

Training Center \_\_\_\_\_

*Educational Services/Quality Assurance Program*

This Student Opinion Form is designed to help Digital assess the quality and usefulness of its training. Please respond carefully and depend on your honest opinion.

Complete the course evaluation of two sections. Do not write your name anywhere on this sheet. In the Evaluation of Course section you will be asked to indicate whether you agree or disagree with each statement. Circle the appropriate response from the following options.

BA = Strongly Agree SA = Agree U = Uncertain D = Disagree SD = Strongly Disagree NA = Not Applicable

PLEASE READ DIRECTIONS ON THE OTHER SIDE. SELECT THE ONE BEST ANSWER.

**BACKGROUND INFORMATION**

1. What is your relationship with Digital? ☐ Instructor ☐ Employee ☐ Other ☐ -3 -2 -1 0 1 2 3

2. What is your primary job area? ☐ Hardware ☐ Software ☐ Management ☐ Education ☐ Other ☐ -3 -2 -1 0 1 2 3

3. How many years of experience have you had with computers? ☐ less than 1 ☐ 1-3 ☐ 3-5 ☐ 5-10 ☐ 10 or more ☐ -3 -2 -1 0 1 2 3

4. Did you meet all the stated prerequisites? ☐ Yes ☐ No ☐ NA ☐ -3 -2 -1 0 1 2 3

5. Why did you take this course? ☐ General interest ☐ Required for current job ☐ Required for new job ☐ To help gain new position ☐ -3 -2 -1 0 1 2 3

6. What is your native language? ☐ English ☐ Spanish ☐ French ☐ German ☐ Italian ☐ Japanese ☐ Chinese ☐ Other ☐ -3 -2 -1 0 1 2 3

**EVALUATION OF COURSE**

7. I obtained a lot of valuable skills and information. 1 2 3 4 5 6 7 8 9 10

8. The course content met my expectations. 1 2 3 4 5 6 7 8 9 10

9. The course was well organized. 1 2 3 4 5 6 7 8 9 10

10. The course materials were easy to understand. 1 2 3 4 5 6 7 8 9 10

11. The instructor emphasized the key points. 1 2 3 4 5 6 7 8 9 10

12. My last overall experience with Digital was excellent. 1 2 3 4 5 6 7 8 9 10

13. The staff members were well trained. 1 2 3 4 5 6 7 8 9 10

14. The material was very knowledgeable at the subject. 1 2 3 4 5 6 7 8 9 10

15. The instructor presented difficult questions easily. 1 2 3 4 5 6 7 8 9 10

16. The instructor's presentation was very good. 1 2 3 4 5 6 7 8 9 10

17. The instructor made the course interesting. 1 2 3 4 5 6 7 8 9 10

18. The instructor emphasized the objectives of the course. 1 2 3 4 5 6 7 8 9 10

19. The instructor taught effectively use of the available time. 1 2 3 4 5 6 7 8 9 10

20. The training center provided all the necessary facilities. 1 2 3 4 5 6 7 8 9 10

21. My satisfaction in the presentation was excellent. 1 2 3 4 5 6 7 8 9 10

22. The classroom was well lit and cool. 1 2 3 4 5 6 7 8 9 10

23. The staff members were helpful. 1 2 3 4 5 6 7 8 9 10

24. Please indicate your overall degree of the training experience. ☐ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor

## Data Bits

### Color Graphics Terminal Offered by Jupiter Systems

BERKELEY, Calif. — Jupiter Systems, Inc. has announced the Jupiter 7 Plus, a color graphics terminal with a 13- or 19-in. screen.

The terminal contains eight 1K-by 1K-byte memory planes and can display 256 colors simultaneously out of a palette of 16.7 million, the vendor said.

The terminal was designed for use in very large-scale integration, mechanical design and printed circuit board design, according to the vendor.

A terminal with a 13-in. screen and 768-pixel by 585-pixel resolution costs \$15,200.

A 19-in. model with a 1,024-pixel by 780-pixel resolution costs \$19,000. Jupiter Systems said from 2126 Sixth St., Berkeley, Calif. 94710.

### DL 3270 Allows Datallynx To Tie IBM Micro to CPU

TORRANCE, Calif. — Local Data, Inc. has announced a software package which allows users of IBM's Personal Computer to use Local Data's Datallynx protocol converters to link the Personal Computer to IBM mainframes.

Called the DL 3270, the package is stored on a 5 1/4-in. disk drive and enables a Personal Computer to emulate an IBM 3278 binary synchronous display terminal when connected to

a Datallynx/3270 or Datallynx/3274 protocol converter on a dedicated RS-232C serial port, the vendor said.

The package costs \$60 for the first user and \$30 for each additional package, the vendor said from 2701 Toledo St., Torrance, Calif. 90503.

### Communications Option Out for System 830 Micro

TUSTIN, Calif. — Sunmicro, Inc. has introduced a communications option for its System 830 business personal computer.

The option allows users to tap into on-line data bases such as Source Telectronics, Inc.'s The Source and Compuserve Information Service. It also allows users to send and receive

telex and TWX messages through RCA Corp.'s global communications service.

The option consists of software and an internal modem. The 830 is a self-contained system that includes a CPU, printer, disk memory, terminal and keyboard.

The communications option is priced at \$995 from Sunmicro at 17862 E. 17th St., Tustin, Calif. 92680.

### Timing Support Module Serves STD-Bus Micros

LAKE OSWEGO, Ore. — Datricon Corp. has announced a 20-channel standard (STD)-Bus-compatible counter and frequency control module.

The Model CFI-20 is a system timing support module for STD-Bus board-level microcomputers. The unit combines four Advanced Micro Devices, Inc. Am9513 System Timing Controllers with an Am9519A Priority Interrupt Controller. The device is said to meet all STD-Bus mechanical, electrical and timing specifications for Zilog, Inc. Z80; Intel Corp. 8085; and Motorola, Inc. 6800 standards, as defined by the STD-Bus Manufacturers Group.

The unit costs \$395 from the firm at 155 B. Ave., Lake Oswego, Ore. 97034.

### Programmable Controller Fits Gould Model 584 Micro

ANDOVER, Mass. — A mid-sized programmable controller designed for mid-sized control applications has been introduced by Gould, Inc.

The 584M is for use with the company's Model 584 personal computers. It is said to have a capability for up to 2,000 I/O points and 1,900 registers. It is available in two levels of functionality, including an advanced instruction set and Ascii capability. Each unit features local and remote I/O.

The 584M is priced at \$9,500. More information is available from the vendor through Box 83-SVS, Andover, Mass. 01810.

### NEC Security Feature Out For Data Modem 300/1200

MELVILLE, N.Y. — NEC America, Inc. has introduced a security feature for its Data Modem 300/1200 (N2128R).

The security feature was designed to restrict access to modem operations through a "programmable password," whereby the user programs his own password into the modem's memory, prohibiting anyone who does not know the password from using any modem function, according to the vendor.

NEC's data modem 300/1200 automatic and logon includes an automatic calling unit, storage capacity of up to 12 telephone numbers and logon sequences, four different dialing modes and editing and control functions.

The modem, including the security feature, costs \$795 from the vendor. Additional information is available from NEC America, based at 532 Broad Hollow Road, Melville, N.Y. 11747.

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## Stearns Introduces Micro Featuring WP, DP Functions

MINNEAPOLIS — A year-old vendor has entered the crowded personal computer arena with an IBM-compatible micro system that reportedly provides up to 2½ times greater performance than IBM's machines for roughly the same price.

Unlike many of its competitors, Stearns Computer Systems Corp.'s micro is optimized for both word and data processing, reportedly performing both functions with almost equal speed. The system can also operate either as a stand-alone machine or in a network with up to 32 interconnected workstations and can communicate with host mainframes through asynchronous or standard IBM protocols, a company spokesman said.

The system, Stearns' first, was formally introduced in mid-April at a large trade show in West Germany and is slated to make its formal U.S. debut in mid-May.

The computer supports both IBM's Systems Network Architecture/Synchronous Data Link Control and 3270 bisynchronous protocols as well as asynchronous transmissions. It is also compatible with an assortment of products. (Continued on Page 68)

## Storage Units, Controller Expand NAS Tape Series

MOUNTAIN VIEW, Calif. — National Advanced Systems, Inc. (NAS) last week expanded its IBM-compatible tape subsystems line with the introduction of two additional storage modules and a controller that reportedly provide at least 20% greater price/performance than their IBM counterparts.

NAS's 7420 series tape units and 7803-23 controller offer twice the performance of IBM's recently announced 3430 subsystem for roughly the same price, according to an NAS spokesman.

The 7420 series models and the 7803-23 also provide approximately the same performance as IBM's more established 3420 tape systems and their 3803-2 controller, but boast a 20% to 40% lower price than those competing products, the spokesman said.

Designed to operate with IBM 4300 and 30 series processors, the 7420 family currently consists of two members — the Models 44 and 66. The introduction of the entry-level machines marks a downward extension of NAS's tape subsystem line.

The 7420-44 operates at 80 in./sec and transfers 128K byte/sec in the phase-encoded mode, NAS said. At 6,250 bit/in. in the group-coded recording mode, the system transfers 500K byte/sec.

The 7420-66 operates at 125 in./sec and

transfers 200K byte/sec and 780K byte/sec in the phase-encoding and group-coded recording modes, respectively, NAS said.

IBM's 3430, by contrast, operates at 50 in./sec and transfers 80K byte/sec at 1,600 bit/in. and 312.5K byte/sec at 6,250 bit/in.

In addition to providing faster operating speeds and data transfer rates than the 3430, the two NAS machines support a

(Continued on Page 70)

## TRS-80 Model 4 Added to Line By Radio Shack



Radio Shack's TRS-80 Model 4

FORT WORTH, Texas — Radio Shack has unwrapped a sequel to its TRS-80 Model III that holds up to 64K bytes of memory, runs both Digital Research, Inc. CP/M-compatible and Model III-compatible programs and has sound capabilities.

Dubbed the TRS-80 Model 4, the system is available in one- or two-disk drive versions or as a 16K-byte cassette-based system. The two-disk drive model, holding up to 64K bytes of main memory, 369K bytes of disk storage, RS-232C and parallel printer interfaces, costs \$1,999. The single-disk drive version, storing up to 184K bytes of formatted data, but not including the RS-232C interface, is priced at \$1,699, a vendor spokesman said.

The cassette-based system, like the disk-based systems, comes with a 12-in. black-and-white screen that displays 80 col. and can be upgraded to perform the same tasks as the disk-based systems. It lists for \$999, the spokesman noted.

The Model 4's 70-key typewriter-style keyboard has three programmable function keys and a 12-key numeric pad, according to the spokesman.

In an effort to increase the disk-based

(Continued on Page 70)

## Said to Support Multitasking Pertec Unveils System 3200 Line

IRVINE, Calif. — Pertec Computer Corp. has introduced a line of Motorola, Inc. 68000-based business computer systems called the System 3200 series. System 3200 units are said to support multitasking, single and multiple users. Languages include Basic, RM/Cobol and APL-68000, as well as applications developed under Digital Research, Inc.'s CP/M operating system.

The System 3200 family includes two desktop models. The first is the Model 3205 single-user system with 256K bytes of random-access memory, three RS-232 ports, monitor, keyboard, workstation and two 5¼-in. floppy disk units. The second, dubbed the Model 3215, is a multitasking system supporting up to five intelligent workstations via coaxial cable. It offers one 5¼-in. floppy disk and one 5¼-in. Winchester disk.

Prices for System 3200 members range from under \$5,000 to \$34,000 for the basic systems, the vendor said from 17112 Armstrong Ave., Irvine, Calif. 92714.



Pertec Computer Corp.'s System 3200

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## Televideo Micro Features Hard, Floppy Disk Storage

ATLANTA — Televideo Systems, Inc. has unwrapped what it claims is the first 16-bit microcomputer to offer 10M bytes of half-height, hard-disk storage and 1M byte of floppy disk storage at the Comdex/Spring '83 conference held here recently.

The TS1603H uses an Intel Corp. 8088 microprocessor, has 128K bytes of internal memory, two RS-232C serial ports as well as an RS-422 port that connects the system to the vendor's local-area network. The system will run programs compatible with Microsoft, Inc.'s MS-DOS Version 2 and Digital Research, Inc.'s CP/M 86 operating systems, a Televideo spokesman said.

The unit's Winchester disk drive

is a slim-line, 5¼-in. device, the company noted. The storage density of each of the system's drives has been increased from 48 track/in. to 96 track/in. Options for the TS1603H include internal memory expansion to 256K bytes and 640 by 240 dot/in. resolution graphics.

Televideo also announced it has enhanced its TS1603 by doubling the system's memory capacity to 2M bytes and making it compatible with programs developed under the MS-DOS Version 2 operating system.

The TS1603H costs \$4,495 and the TS1603 costs \$2,995. The vendor is located at 1170 Morse Ave., Sunnyvale, Calif. 94033.

## Alphanumeric Scrolling Out For Raster Model One

NORTH BILLERICA, Mass. — Easter Technologies, Inc. has announced the availability of alphanumeric scrolling windowing firmware for its Model One family of color graphics controllers.

The firmware reportedly eases development of interactive, computer-aided design systems by allowing users to select the window size, the color of the foreground, background and text, as well as text size, angle and boldface in multiple scrolling text windows.

The windows are also said to provide for nondestructive overlay of text and priority display of

text, a spokesman said.

The Raster Model One family of intelligent color graphics controllers contains an integrated debugger, over 100 graphics commands and an applications development package.

Existing Model One/40 and One/60 units covered by Raster's annual update service will receive the alphanumeric scrolling window firmware at no charge. For other customers, the upgrade is priced at \$350. More information is available from Easter Technologies, 9 Executive Park Drive, North Billerica, Mass. 01862.

## Stearns' Micro Said to Perform WP, DP Function

(Continued from Page 67)

gramming languages, including Basic, Cobol, Fortran and Pascal.

The microcomputer incorporates an Intel Corp. 8086 microprocessor, which operates at 8 MHz, more than twice the speed of the IBM Personal Computer's Intel 8086. Unlike the 5-bit IBM micro, the Stearns product also uses a 16-bit bus and further enhances its performance through a proprietary random-access memory refresh technique, the vendor said.

Although it uses the same operating system as its IBM competition, Microsoft, Inc.'s MS-DOS, the Stearns unit comes with additional proprietary software said to overlay the processor's control program. This extra software layer, in effect, extends MS-DOS and allows users to revise their configurations from a keyboard to communicate with almost any commercially available data base management system, the company official said.

Aimed primarily at users in Fortune 1,000 companies, the micro supports Micronet, Stearns' proprietary communications network, which allows up to five of the units to be interconnected and to share common storage and other system resources. By December, the machine will also be available with Stearns' Intelligent Communication System (ICS), which will reportedly permit users to form local or distributed networks embracing as many as 32 workstations.

With either ICS or Micronet, the Stearns computer will run under Digital Research, Inc.'s Concurrent CP/M-86 operating system. As a single-user product, meanwhile, the machine will continue to use Microsoft's MS-DOS.

A basic system requires 128K bytes of main memory that can be expanded in 128K- or 256K-byte increments for a maximum of 896K bytes. The unit can also be configured with a choice of up to four 5¼-in. floppy and two 5¼-in. Winchester disk modules.

Prices for the system start at about \$3,300, and deliveries will begin in May from Stearns at 3501 Raleigh Ave. S., Minneapolis, Minn. 55416.

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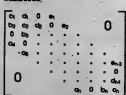
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# Micro Line Released for Multiuser Applications

MOUNTAIN VIEW, Calif. — Cromemco, Inc. has introduced a series of general-purpose microcomputers to perform multiuser, multitasking applications in business, engineering, science and educational environments.

Equipped with both Motorola, Inc. 68000 and Zilog, Inc. Z80A processors, the CS-3A System Three also contains two 8-in., slim-line disk drives that can handle up to 2.4M bytes of floppy disk storage. The system has expansion capability up to 4M bytes of physical memory, with optional error checking and correcting memory, the vendor noted. Disk storage is reportedly expandable with an optional 21M-byte unfur-matted integral hard disk.

This product line can be used for networking applications using the vendor's C-Net local-area network. Other features of the CS-3A line include the vendor's Cromix operating

system, which reportedly provides users with a Bell Laboratories' Unix-like interface, plus the ability to run CP/M-based software, according to a vendor spokesman.

The CS-3A product line is priced between \$6,995 and \$7,995. Cromemco can be reached at 280 Per-nando Ave., P.O. Box 7600, Mountain View, Calif. 94039.

## Radio Shack Unwraps TRS-80 Model 4

(Continued from Page 67)  
machines' processing speed, the company is bundling in a new operating system called TRSDOS 6.0 as well as Microsoft, Inc.'s version of Basic.

TRSDOS 6.0 has a Memdisk feature that creates a fast disk drive in unused memory, which eliminates time-consuming disk access, the spokesman said. The operating sys-

tem's sound control includes variable tone and duration. Prompts, alerts and sound effects can be selected using the Sound command from Basic or as specified from the built-in job control language, the spokesman added.

The Model 4 also has a print spooler that frees the system to perform other tasks while it is printing. In addition, it has a terminal program

called Comm that provides disk file send and receive capabilities and modem support for communications with other TRS-80 microcomputers and information networks such as Dow Jones & Co., Inc., the spokesman maintained.

The Model 4 disk versions' 64K bytes of main memory can be upgraded to 128K bytes and up to 4 MHz clock speed, the vendor spokesman claimed. In addition, other options include a 64K-byte random-access memory kit priced at \$149, high-resolution graphics and a 5M-byte hard disk.

CP/M Plus and Basic will be available shortly for the Zilog, Inc. Z80A-based system, the vendor said from 1800 One Tandy Center, Fort Worth, Texas 76102.

## NAS Introduces Control Unit, Storage Modules

(Continued from Page 67)  
wider array of operating systems than their IBM counterpart, the spokesman said. Both the Model 44 and 66 work with MVS, VM, VSI, VSE, OS/MFT, OS/MVT and the Air-line Control Program.

The 3430, however, reportedly supports only VM and VSE.

Among the 7420 family's other advantages over the 3430 is the NAS line's superior storage-module support. The NAS machines' 7803-23 controller supports as many as eight concurrent tape units, compared with four for the product that controls the 3430, the vendor spokesman said.

Both the 7420-44 and -66 are also equipped with a two-channel switch as well as with two-by-eight and two-by-16 control switches — features not offered with the 3430, the source claimed.

A typical 7420-44 costs more than 20% less than a comparably configured 3420-4 tape system, while a 7420-66 typically sells for almost 25% less than an equivalent 3420-6. The 7803-23 controller, meanwhile, is priced more than 40% lower than the 3803-2, according to the vendor spokesman.

In addition to being compatible with 4300 and 30 series processors, the 7420 family subsystems reportedly operate with all IBM 370 series members starting with the Model 135. The NAS units can also be used with the vendor's own Advanced System/3000, 5000 and 6600-series processors.

The 7420-44, -66 and 7803-23 cost \$15,000, \$17,000 and \$20,000, respectively.

Deliveries of all three models will begin in July from NAS at 800 E. Middlefield Road, Mountain View, Calif. 94042.

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2. How many documents do you normally retrieve each day? ☐ Less than 10 ☐ 10-25 ☐ Over 25

The Kodak KAR-4000 information system. It gives the computer a photographic memory.



## Add-In Memory Boards Fit DEC VAX-11/750, 730

NEWTON, Mass. — EMC Corp. has announced 1M-byte and 512K-byte add-in memory boards for Digital Equipment Corp. VAX-11/730 and VAX-11/750 processors.

Called the EMC VX-1MB and VX-1/2MB, the boards are standard plug-compatible hex cards. Each memory board contains a rear-mounted off-line switch that allows the memory card to be electrically disconnected. An LED status light is also mounted at the rear of each card, the vendor said.

The EMC memory boards are completely hardware- and software-compatible with the VAX-11 host processors, the company noted. The

512K-byte board costs \$1,550, and the 1M-byte unit costs \$2,450, the vendor said from 385 Elliot St., Newton, Mass. 02164.

## Memory Board Fits Q-Bus Systems

SANTA ANA, Calif. — Trendata Corp. has announced a 1M-byte quadword memory board for Digital Equipment Corp.'s Q-bus systems.

Called the Pincomm 235+, the unit can operate on DEC PDP-11/23 Plus, Micro-11, PDP-11/235, LSI-11/23 and other Q-bus systems. The unit features switch-selectable 22-bit addressing that allows a user to add memory to complete the range of 22-

## Multiuser, 16-Bit Desktop Debuts

MONTGOMERYVILLE, Pa. — A 16-bit, multiuser desktop system capable of supporting up to four users has been unveiled here by Digilog Business Systems, Inc. (DBS).

The DBS 16 microcomputer contains an Intel Corp. 80186 micro-

processor, two 5¼-in. disk drives, 256K to 512K bytes of random-access memory and interface capacity for one to four DBS workstations, the vendor said. It operates under Digital Research, Inc. CP/M operating system software.

The DBS 16 is priced from \$1,095, the vendor said from Wetzel Road & Park Drive, P.O. Box 355, Montgomeryville, Pa. 18936.

## Mostek Boards Out for DEC

CARROLLTON, Texas — Mostek Corp. has announced an add-on memory board for Digital Equipment Corp.'s PDP-11/70 processors and three control circuit boards for the VMEbus. The VMEbus was designed jointly by Mostek, Motorola, Inc. and Signetics Corp. as a microcomputer interconnect bus.

The add-on memory board for DEC PDP-11/70 processors features from 1M to 4M bytes of additional memory. Called the MK8661, the memory boards are hardware- and software-compatible with the DEC processors and are identical to similar memory upgrades offered by DEC, the vendor said. A 2M-byte memory configuration costs \$13,850, the vendor said.

The three VMEbus boards include a floppy disk controller board, a Shugart Associates, Inc. System Interface (Sasi) board and a memory managing CPU board.

The three boards were designed for a variety of applications including data processing, word processing and image processing, as well as communications and industrial automation applications, according to a vendor spokesman.

The floppy disk controller board costs \$1,250, the Sasi interface costs \$1,250 and the memory-managing CPU costs \$2,300, the vendor said from 1215 W. Crosby Road, Carrollton, Texas, 75006.

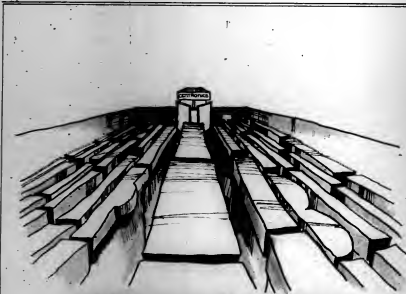
## Sorbus Supports TRS-80 Model III

FRAZIER, Pa. — The Sorbus Service Division of Management Assistance, Inc. has announced a full-service option for the Radio Shack TRS-80 Model III and its related peripherals.

Users have the option of on-site maintenance, van pickup and delivery or carry-in service. A Sorbus spokesman said maintenance on most components can be carried out within 24 hours at the firm's 160 service locations, 15 maintenance depots or eight Sorbus Station computer support retail centers.

While pricing varies depending on the configuration, a Sorbus spokesman said a typical 48M-byte system with two floppy disk drives costs about \$38/mo for on-site maintenance and about \$22/mo for a carry-in maintenance contract.

Sorbus offers similar maintenance plans for IBM and Apple Computer, Inc. microcomputers, the firm said from 50 E. Swedesford Road, Frazier, Pa. 19355.



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However, the phenomenal attendance generated by this year's show has caused the Registration Area to be moved to the other end of the hall.

Now, instead of being in the front, we're in the back. Way in the back. With some other good friends like IBM, Easman Kodak, Wang, Bell Systems, Perkin-Elmer, 3M, and Fairchild.

So when you're looking for Centronics at NCC this year, find the registration area and keep walking. All the way back. To Booth N-3600. What you see will be worth the walk.

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# Managers, Secretaries Polled Study Identifies Key to OA Productivity

By Bruce Haard  
CW Staff

MINNEAPOLIS — A national study conducted by Response Analysis for Honeywell, Inc. has found that managers and secretaries identify communications — human, not electronic — as the key to improving office productivity.

It also found that more than half of the offices surveyed do not have word processing equipment and that fewer than one in 10 managers use a personal computer.

Response Analysis questioned 1,264 secretaries and 937 managers from 443 companies with 100 or more employees. Results were based on a computer-generated random sample, drawn by Dun & Bradstreet, Inc., of "information-intensive" businesses throughout the U.S.

Four in 10 secretaries thought that the most important thing managers can do to improve secretarial productivity is to communicate better, the study claims. That group said they want managers to inform them about how their work fits into the project as a whole and to minimize changes requiring typing.

Only one in five secretaries said no communications improvement is necessary.

Secretaries also expressed a desire to take a more "team-oriented" approach to office work. One third of the secretaries surveyed supported that desire. However, only one-half as many managers agreed.

The study found that managers think they would be more productive if secretaries would minimize unnecessary interruptions and take on more responsibilities. Managers also cited the need for more automated equipment.

While more than one-half of the offices

*'Four in 10 secretaries think that the most important thing managers can do to improve secretarial productivity is to communicate better... only one in five secretaries said no communications improvement is necessary.'*

surveyed did not have word processing equipment and fewer than one in 10 managers used a personal computer, there is still a strong interest in automated equipment, the study claims.

It backs that claim by noting that four out of 10 managers who do not have automated equipment said they favor it for their own use.

Managers who can type were reportedly more interested in what the equipment can do — especially in producing work of

higher quality.

Managers who do not know how to type were more likely to say that their work would not be affected, the survey explained.

More than one-third of nonuser managers and secretaries said that half or more of their daily work could be automated, but only 21% of paired managers and secretaries could agree on that point.

Both managers and secretaries agreed that secretaries are capable of taking on more responsibilities with automated equipment, although four in 10 managers said their secretaries are already too busy.

Seventy-five percent of secretaries said they are not too busy to take on extra duties, and 40% said their managers see no need to delegate work to them, the survey found.

The study is available free from Honeywell Corporate Public Relations at Honeywell Plaza, Minneapolis, Minn. 55408.

## CSC Adds Reporting Feature To Its Electronic Mail Service

EL SEGUNDO, Calif. — Computer Sciences Corp. (CSC) has added automated reporting features to Notice, its electronic mail service.

With the new features, Notice enables a user to design reports that prompt clerical personnel for the information required to complete the report.

The clerk can then order the data to be analyzed by sets of predeveloped computer programs, consolidated with similar information from other sources and automatically forwarded to designated

recipients anywhere on the company's Informat network, according to a vendor spokesman.

Users can send and receive messages and reports through a variety of devices, including personal computers, minicomputers, word processors and both dumb and intelligent terminals, a vendor spokesman said.

Notice service is priced at normal charges for Informat resources used, the spokesman said.

More information is available from CSC, 650 N. Sepulveda Blvd., El Segundo, Calif. 90245.

## 'Mergeright' Fits Serif Processors

MINNEAPOLIS — Wordtronix, Inc. has announced Mergeright, a variable information generation package for the firm's Serif and Serif2 word processing systems.

The package can be used to generate mailing lists and customer information. The information on the list can then be merged with a letter. The software function is accessible through the firm's Typewriter II word processing software.

The Mergeright feature costs \$300 from the firm at 9930 W. 74th St., Minneapolis, Minn. 55344.

## ADP Net's Automail Expanded To Include Telex Capability

ANN ARBOR, Mich. — ADP Network Services, Inc.'s mail service, Automail, has been expanded to include telex addressing and receiving capability.

Automail moves and stores information and messages electronically to locations connected by a communications network, the vendor said.

Through the telex interface, business organizations can reportedly transmit a message simultaneously to both telex addresses and other Automail locations without retyping and resending the message.

With the service's electronic bulletin board features, organizations can reportedly make time-critical information centrally available to distant office locations.

The bulletin boards can also be used as a part of the employee communications program to post job openings or announce policy changes, a vendor spokesman said.

Users of the telex service pay the standard Automail rate of \$14 per hour of connect time, as well as regular telex charges. More information is available from the vendor at 175 Jackson Plaza, Ann Arbor, Mich. 48106.

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## WP Capability for HP 3000 Out

BELLEVUE, Wash. — Minisoft Office Systems, Inc. has announced a word processing capability for Hewlett-Packard Co.'s HP 3000 system.

Miniword was designed to be used with any terminal as a full-function word processor connected to the HP 3000. Miniword is used on a microprocessor called Softbox, which front ends each

computer terminal with 64K bytes of memory.

Miniword features column manipulation, global search and replace, interface to data processing for mass mailings, multiple formats per document, automatic pagination and underscore.

Miniword carries a license fee of \$7,500 and costs \$4,500 second site. Softbox is priced at \$895. More infor-

mation is available from Minisoft at 1611-116th Ave. N.E., Bellevue, Wash. 98004.

## Honeywell Facility Bows

WALTHAM, Mass. — Honeywell, Inc. announced a modular Electronic Forms and Fonts facility for its non-impacting, high-speed Page Processing System.

The facility enables users

## Office System Runs on IBM, DEC, Prime, PE Units

KING OF PRUSSIA, Pa. — AGS Management Systems, Inc. has announced Office-

Pro, a full-screen, menu-driven, single-key command system designed to help users perform common office functions.

For use with IBM's CICS, Digital Equipment Corp.'s PD-11, Prime Computer, Inc. or Perkin-Elmer Corp. systems, Office-Pro can reportedly file and retrieve mail messages, narrative files and customer/prospect information. Mail messages can reportedly be sent, read, previewed, filed, distributed and answered; and telephone messages are said to be automatically distributed to the proper individuals.

The package is priced at \$31,500 from the vendor at 890 Valley Forge Plaza, King of Prussia, Pa. 19406.

## WP Tool For Series/1 Gets Updated

GARDEN GROVE, Calif. — Computer Information Enterprises, Inc. has introduced an enhanced version of the original word processor for the IBM Series/1.

Cats II features word wrap at the right margin, automatic paragraphing, a spelling dictionary, abbreviation expansion, document assembly, mass-mail letter and envelope, page header and footers, automatic page numbering and automatic document date version, a vendor spokesman said.

The word processing package sells for \$1,500; the dictionary and mass mailer cost \$500 each. More information is available from the vendor, which is located at 13030 Euclid St., Garden Grove, Calif. 92643.

## Eckerly Offers OA Reports

BROOKLINE, Mass. — The Eckerly Co., which specializes in surveys, training and consulting for office automation, introduced the Eckerly Reports on Office Automation Productivity.

The reports are tailored specifically for each subscriber. Over a one-year period, the report process is performed every quarter for sponsor organizations. Each building block of office automation is examined: word/text processing, desktop computers and telephone systems.

A one-year subscription costs \$4,000 and generally covers organizations with up to 50 employees. Eckerly said from Suite 206, Heartstone Plaza, 111 Washington St., Brookline, Mass. 02146.

## The Economics of Office Automation

Personal computers are designed for single users.

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data base (up to 272 MBytes), shared CP/M® compatible software, printers, modems, and each other.

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In fact, list price for a typical seven-user Molecular system is under \$3,000 per user. Including terminals, software, and a letter quality printer. Cost-per-user decreases as more users are added.

So use your personal computer to run spreadsheets at home. And build your office of the future around Molecular.

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CP/M is a registered trademark of Digital Research, Inc.

# SIA Notes Steady Increase in Orders Recovery Looks Good for Semi Industry

By Bill Laberis  
And Robert Batt  
CW Staff

No one is doing cartwheels yet, but signs of a steady recovery within the semiconductor industry are becoming apparent.

And a sustained recovery for the semiconductor makers, most of which fared poorly throughout the recession, can only mean sustained recovery for their customers, the computer vendors. However, the question remains: Will the positive signs continue or melt away come summer like last year?

As the accompanying table shows, the top merchant semiconductor companies in the U.S. — those who sell most of their chips to other vendors — posted mixed results in the first quarter of 1983. Intel Corp., for

	First Quarter 1983 Revenues Profit (Loss)	First Quarter 1982 Revenues Profit (Loss)	% change Revenues % Change Profit
Texas Instruments	1.17 Billion 7.1 Million	1.08 Billion 27.7 Million	8% -74%
Motors	942 Million 32 Million	913 Million 34.6 Million	3% -8%
National Semiconductor	263 Million (18 Million)	239 Million (5.4 Million)	10% -333%
Intel	237 Million 12.5 Million	207 Million 5.4 Million	14% 230%
Advanced Micro Devices	97 Million 6.6 Million	75 Million 3.1 Million	29% 113%

Semiconductor Scoreboard

example, rebounded strongly from its dismal quarterly results a year ago, while National Semiconductor Corp. continued to register big losses.

But what the table does not show is a steady increase in semiconductor orders that be-

gan last November and has gained momentum ever since, according to the Semiconductor Industry Association (SIA).

Figures recently reported by the SIA's 55 members showed that orders in the first quarter exceeded shipments by 32%.

This figure was 18% in the same quarter a year ago. Thomas Hinkelmann, executive director of the SIA, said.

"We're being cautious, of course, because things were (Continued on Page 80)

## Miti Director Cites 'Harmonizing' As Factor in Japan's Industrial Success

By Bruce Hoard  
CW Staff

TOKYO — The Japanese Ministry for International Trade and Industry (MITI) is "harmonizing" an orchestra of otherwise dissident commercial players, according to Hideji Sugiyama, deputy director of the Electronics Policy Division of MITI's Machinery and Information Industries Bureau.

As a result, Japan has hoisted itself from the ruins of World War II and become one of the world's foremost industrial competitors, especially in the areas of semiconductor and computer technology.

During a recent interview here, Sugiyama explained that MITI was formed in the aftermath of the war to develop basic, low-technology industries.

"The quality of life of the Japanese people and their ability for research and development was significantly poor,"

he commented. "MITI's policy was to promote R&D and productivity, especially in such im-

(Continued on Page 76)

## Vector Graphic Realigns Top Management

THOUSAND OAKS, Calif. — Less than one month after reducing its work force by 25% to counter large losses, Vector Graphic, Inc. has announced a high-level management shake-up.

Fred Snow, company president and chief operating officer since last June, has been replaced by his boss, compa-

ny founder Lore Harp, who has assumed the president's role in addition to her duties as chairwoman and chief executive officer of the business microcomputer maker.

In addition, Thomas Harincor resigned as vice-president of finance. Harincor will be replaced, but Harp (Continued on Page 80)

## STC's Profits Continue To Skid

LOUISVILLE, Colo. — Aemic earnings continued to plague Storage Technology Corp. (STC) in the first quarter of 1983, as the company reported a 93% drop in profits compared with the first quarter a year ago.

STC reported profits of \$1.15 million or 3 cents per share in the quarter compared with \$18 million or 52 cents per share last year. Revenues in the quarter fell 16% to \$220 million, compared with \$262 million a year ago.

Commenting on the results, Jesse I. Aweida, company chairman, said, "All areas of our business are doing well except for our disk business, which is down because we are changing (Continued on Page 76)

COMPUTER INDUSTRY

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The Beall 7000 Series is a modular computer system designed for the business user. It features a 16-bit CPU, which can be expanded to 32-bit. The system is designed for the business user who needs a computer that can handle a wide range of applications. The Beall 7000 Series is a modular computer system designed for the business user. It features a 16-bit CPU, which can be expanded to 32-bit. The system is designed for the business user who needs a computer that can handle a wide range of applications.



John Beall & Company, Inc.

## USC Computer Law Institute Set for May 11-13

LOS ANGELES — The University of Southern California (USC) Law Center will hold its fourth annual Computer Law Institute here May 11-13.

The two-day seminar will present an in-depth examination of proprietary rights, international antitrust and contract issues controlling the development, sale and distribution of computer

products.

The seminar will examine trademark and trade name problems common in the computer industry.

Registration for the seminar is \$350 for both days, \$240 for one day. More information is available from USC Computer Law Institute, Law Center, Room 105, University Park, Los Angeles, Calif. 90089.

## Sugiyama Likens Japan's Success To 'Harmonizing' an Orchestra

(Continued from Page 75)

important industrial areas as coal and textiles." The harmonizing to which Sugiyama referred comes into play when Miti sponsors special projects, such as the very large scale integration (VLSI) project conducted between 1976 and 1979. The goal of that project, which took two years to or-

ganize, was the development of a semiconductor chip with 1M byte of storage capacity. Although that goal was not realized, Japan has become the first country to develop an experimental 256K-byte chip.

The project brought together five fierce competitors — Hitachi Ltd.; Nippon Electric Co. Ltd.; Toshiba

Corp.; Fujitsu, Ltd.; and Mitsubishi Electric Corp. — as part of a coordinated effort. "Each of those companies did not have the same interests in the beginning," Sugiyama noted. "Our goal was to harmonize the activity of the private sector by discussion. We are a conductor of the orchestra."

Another goal was the procurement of government funds for the project. To that end, Miti came up with 29 million yen, or about \$123,000.

Perhaps Miti's best known endeavor outside of Japan is the Fifth-Generation Computer Project. Started last year, it is working toward the development of a high-speed, knowledge-based computer featuring the function of inference.

Miti secured 400 million yen — approximately \$17 million — for the fifth-generation project during 1982, Sugiyama commented.

Another well-known Miti-sponsored effort is the supercomputer project. Through it, the Japanese hope to develop a computer that works 1,000 times faster than today's conventional computers.

Asked what lesson the U.S. computer industry might take from Miti, he responded, "One of the factors of the Japanese success is the coexistence of competition and coordination. In the joint VLSI project, they set a common target and coordinated it."

"In the U.S., the R&D of a company cannot coordinate such a project alone," he said.

## STC Posts Profit Skid

(Continued from Page 75)

from one product generation to another." STC has not yet begun volume shipments of its 8380 thin-film head disk drive, which will compete with the industry-leading IBM 3380.

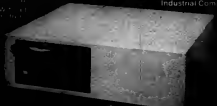
This most recent quarter marks the second consecutive one in which earnings plummeted. In the final quarter of 1982, profits fell 75% while revenues increased slightly.

STC has taken several steps to contain costs in recent months. The most recent measure was a layoff of 500 workers at the firm's Colorado-based operation.

At the time of these layoffs in March, an anticipated strong demand for the company's disk storage products had not materialized.

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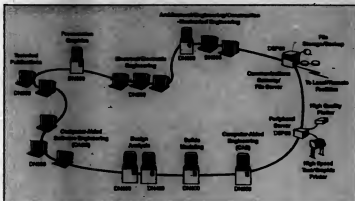
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Domain: The Next Generation

# Would Merge Policy Functions Commerce Endorses Trade Department Concept

By Jake Kirchner  
CW Washington Bureau  
WASHINGTON, D.C. — The Reagan administration has formally endorsed the concept of a cabinet-level department of trade, which would merge the trade policy functions of the U.S. Trade Representative's Office and the trade agencies of the Commerce Department. DP industry representa-

## Stratus Gives Supplier Cuts

NATICK, Mass. — Stratus Computer, Inc. has announced a marketing program designed to provide cash incentives to systems houses that convert and sell their application software for use on the company's Stratus/32 Continuous Processing System.

Software suppliers accepted under the program will receive a fee for each new Stratus/32 sold to run their software. The fee schedule will increase over a two-year period in proportion to the aggregate value of the Stratus products sold, with a typical fee of about 12% of the end-user selling price, the vendor said.

The program is intended to encourage software houses to acquire Stratus computers by offering a 25% discount on Stratus products.

Stratus is at 17 Strathmore Road, Natick, Mass. 01760.

tives generally have been noncommittal about the trade department concept, which has been discussed here for a number of years. One industry spokesman remarked that it is the policy that is important, not the agency that carries it out. The administration plan may be "more form than substance," he suggested, noting it would create an even bigger bureaucracy for trade matters than now exists in the Commerce Department.

But the plan is not without support, and several bills now pending in Congress would mandate a similar trade reorganization, although there are differences among the various proposals. Also, the administration's plan is still far from complete. Left undecided is what to do with other Commerce agencies, such as the National Telecommunications and Information Administration and the National Bureau of Standards, if the Commerce Department is dissolved.

Commerce Secretary Malcolm Baldrige, presenting the plan at an April 25 White House press briefing, said details of the plan would be worked out in consultation with Congress. The newly envisioned by the White House, would consist primarily of the present Trade Representative's Office, now part of the Executive Office of the President, plus the

Commerce Department's International Trade Administration.

Baldrige said the reorgani-

zation is needed because "at present, trade responsibilities are scattered over several major cabinet-level

agencies. Because responsibility is diffused, the decision-making process is at times difficult," he said.

## Steady Increase in Semi Orders Bodes Well for Industry Recovery

(Continued from Page 75)  
looking pretty good a year ago, then came the summer and the roof fell in on us," Hinkelman said in a telephone interview.

"But orders started rising in November and have continued each month since then," he said. "April's figures are sustaining that. We feel that orders will continue to rise throughout the year. This must mean good news for the entire computer industry."

The good news is in sharp contrast to the sluggish performance of the semiconductor industry in 1982, when year-end sales of \$9.4 billion were up only 1% over 1981. Vendors like National Semi and Texas Instruments, Inc. were forced to lay off several thousand workers, while other companies such as Intel cut employee wages or work weeks.

Nonetheless, sales continued to grow, although slowly. But chip sales are one thing, while profits have proven to be quite another. With the exception of Advanced Micro Devices, Inc., the major U.S. semiconductor

makers have reported bleak earnings. Intel's big quarterly increase just reported is in relation to a very poor quarter a year ago.

In brief, the chip makers have been hit by a one-two punch of depressed demand and stiff price competition from the Japanese, both of which have driven chip prices into the ground. Thus, while most chip makers have reported increased sales, profit margins have been devastated.

SIA's Hinkelman and vendor spokesmen agreed that prices should stabilize as demand increases, restoring something resembling normal profits to the industry.

But some industry observers have warned against an overly optimistic interpretation of the recent sales and orders figures.

James Magid, analyst with L.F. Rothschild Co., Unterberg, Towbin, Inc., said, "There has been no upturn in computer business or user activity that would account

for this increase in semiconductor orders, and it is not an indicator of economic recovery. An economic revival is occurring, but these figures are not a sign of it."

Magid said special factors explain the recent growth in semiconductor orders, including a normal restoration of inventories and the fact that Motorola, Inc. had to recall huge amounts of 64K-byte memory chips. This recall, Magid said, caused panic buying for those chips. Seth Goldwin, analyst with Paine Webber Co., said the order increase has been prompted by distributors selling to small system makers, not to vendors of mainframes and the bigger minicomputers.

"There will be no real pick-up in semiconductor sales unless there is a sustained increase in sales of mainframes and minicomputers," Goldwin said. Sustained growth among the big system makers will be stimulated only by more capital spending.

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# DPers to Buy Computermart Concept: IBM Exec

By Bob Johnson

CW New York Bureau

**NEW YORK** — It may not be like spending a day at the supermarket, but DPers will probably be shopping for their computer needs in "computermarts" in the not-so-distant future.

That is the view of Fred Fishman of IBM's National Accounts Division, who spoke here recently at a Yankee Group seminar on new computer marketing strategies. IBM has signed a lease with Boscom, the proposed computermart in Boston, to exhibit virtually all of its product line, Fishman said.

Research funded by both Boscom and IBM supports the need for and probable success of these giant computer product supermarkets. They are likely to attract users and sellers of computer equipment from most sectors of the information industry, Fishman said. But while the likelihood of success for this new concept is apparent, in reality it is difficult to determine just how successful the computermart will be because none exist in the proposed form today.

## Essential Elements

In an attempt to gauge what impact computermarts will have on the industry, Fishman offered IBM's view of what will be housed under their roofs. He said that the essential elements of the computermart will consist of sellers, including resellers, value-added resellers, distributors, dealers, manufacturers, suppliers and independent computer services; available computer and communications product vendors; and buyers made up of end users who buy in volume, professional end users groups brought in by organizations that target specific consumers and unscheduled end users (those brought in by general promotion).

Although many people think of the computermart concept simply as a trade mart — and in terms of displaying industry-specific products, the view is correct — the computermart will exist not only for the traditional reseller or dealer, but for the end user as well.

"In a way it will be another shopping center offering retail sales with clusters of competitors, but the essential point to understand is that professional user groups, such as the American Bankers Association, will be brought in by the programmatic organizations offering potential sales to customers grouped by interest," he said.

However, "the computermart will not replace the normal computer product distribution methods like the direct sales force, dealers, value-added remarketers and retail outlets, but will complement them," he maintained.

In an attempt to forecast whether computermarts will attract the interest of buyers and sellers, Fishman cited Boscom-funded research which showed that the declining cost of computer products is drawing more buyers, thus satisfying the first criterion for success.

Noting that another key to the success of trade marts is the need for independent suppliers, Fishman said the Boscom study revealed that the

DP industry's evolution toward standardization is lowering the cost for independents to enter the business.

Frequent product model and style changes are also necessary for a successful trade mart, according to the Boscom research, and the DP industry's dynamic product line fills that requirement. The final measure of success according to Boscom, Fishman said, is the need to demonstrate products. The study showed that the growth and change occurring in DP dictate that products be both demonstrated and advertised and concluded that a market need for a U.S. information trade mart will exist in the 1983-85 time period.

The computermart's impact on the

volume end user and vendor was also measured in the Boscom research, which found that 65% of top DPers at major companies with a median DP budget of \$500,000 would visit a computermart.

## IBM Research

From IBM-funded research on computermarts during which user focus groups were held and vendors were interviewed in both Boston and Dallas, "we learned from vendors that the high costs and the complexity of selling products in computermarts represent problems with the idea," IBM's Fishman maintained, adding, "but because they feel all of their competitors will be in the marts, they said they would be also."

The IBM research found that end users see the computermart concept as a "huge circus," which is a bad atmosphere in which to make decisions, Fishman said. However, both vendors and users view the marts as being better places to see products than trade shows.

"The computermarts were perceived as being useful for replacing demos and also good for showing low-end systems," Fishman said. He added that the key to the appeal of computermarts is the anticipated speed with which the buying process can be made.

The IBM study concluded that end users will definitely go to computermarts and that most vendors will participate, Fishman said.

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# Xerox Head Advocates 'Advanced Control Systems'

By Paul Gillin  
CW Staff

CHICAGO — The hope for American manufacturing lies not in wage competition but in achieving "greater productivity through advanced control systems to which management is completely dedicated," according to Haig M. Bazoian, president of Xerox Computer Services.

In a recent interview here, Bazoian said that although American business lags behind the Japanese on the assembly line, it still leads the world in planning systems. Bazoian, who recently toured a number of Japanese businesses, said he sensed that "Japanese managers are worried about the threat from Southeast Asia and about the U.S. catching on to

... Business may have to bite the bullet and scrap large parts of its installed software. More than 60% of user software is over five years old and more than a third is over 10 years old."

some of their methods.

"Clearly where the Japanese have made the most progress is in the area of repetitive [continuous assembly line] systems," he said. "Now they're turning to us to step back and do better planning."

Bazoian praised the "strong feeling of a company working as a fam-

ily" that he discovered in Japan. He said one Fuji Electronics factory claimed that 232 ideas had been submitted per employee in 1982. "There was high visibility and open communication between all parts of the business," he said. "The sense you got was that all are in tune with what is happening in the company."

As the U.S. has begun to adopt many of the Japanese management techniques, the stage has been set for a dramatic marriage of advanced planning and production techniques, he said.

But in order to achieve that, business may have to bite the bullet and scrap large parts of its installed software. More than 60% of user software is over five years old and more

than a third is over 10 years old, he said.

"What you've got is a patchwork," he said. "I am now running into more and more [management information systems] managers who are looking into the possibility of throwing it all away and starting over."

MIS managers are going to have to become effective salesmen in order to convince top management that the software is obsolete, Bazoian said. However, most are still not getting their point across because "it is very difficult to describe in business terms what is wrong," he said. "MIS managers have to get close to the user to identify the business needs," he claimed.

"They have to look at business problems, not DP problems, then go to management and say what is the benefit and value of the new system."

In a lot of companies, MIS is still viewed as working for finance" and not for strategic planning or manufacturing, he added.

## Vector Realigns Top-Level Brass

(Continued from Page 80)

"will remain as president indefinitely," the company announced. A company spokesman would not comment on whether Snow had resigned or been fired, saying only that Snow "has left the company."

The changes came in the wake of a company prediction that it would lose nearly \$1 million in the first quarter of this year, a loss some analysts had attributed to management changes made in the past year at Vector Graphic [CW, April 11]. The losses further prompted the company to cut the pay of top corporate officers.

Commenting on the shake-up in a prepared statement, Harp said, "We need to get back to the close, hands-on management style that made us one of the most successful of the early business computer companies."

"In order to capture some of our earlier drive, enthusiasm and financial strength, I want to get back to directly running the company so that I can quickly identify and rectify any continuing problem areas," she said.

Vector Graphic had grown rapidly through mid-1982, when it began experiencing delays in shipping its Vector 4 microcomputer. The company's product line has also battled the stiff competition of mainframe companies that have announced business micros and then competed with Vector Graphic for shelf space in computer stores.



# Micros Erode Traditional Business Base Time-Sharing Seen Facing Sweeping Changes

By Paul Gillin  
CW Staff

CHICAGO — The computer time-sharing industry will go "through wrenching kinds of changes" in the next few years as microcomputers and packaged applications begin to erode the industry's traditional business base. Vendors that have relied on providing raw time and engineering-type applications "are going to be in trouble" as cheaper hardware muscles in on their territory.

So stated Haig M. Bazoian, president of Xerox Computer Services, in a recent interview here.

"When a job can be done more economically on a personal computer, time-sharing will be hit very hard," the executive said. "But where there are applications that are specific and difficult to replicate, time-sharing will grow."

Xerox Computer Services has been involved in time-sharing since 1970 and has reached annual revenues of nearly \$100 million, Bazoian said. About four years ago, the company began offering packaged financial applications for IBM and Digital Equipment Corp. VAX-11 computers.

## Sweeping Changes

Within the last six months, Xerox has expanded into manufacturing software and added a range of end-user-oriented products "targeted toward information centers."

Such sweeping changes in the vendor's product line are indicative of the software industry as a whole, which is moving sharply toward packaged applications, Bazoian said.

"If I were a [management information systems] manager today and the alternative was developing in-house, I'd want to go with packages," Bazoian said. "Data base management systems [DBMS] and other fourth-generation tools have made it easier to make [the necessary modifications] in-house," he added.

Intense competition is developing in the packaged software field as vendors scramble to enter the market from diverse positions, Bazoian said. He sees the potential for time-shared vendors to take advantage of their traditionally system-oriented function to capture a lead as providers of "total solutions."

"You can go to different companies and get a whiz-bang DBMS, whiz-bang [manufacturing resource planning system] and whiz-

bang financial systems," he said. "With us, you won't get the best of all worlds, but you'll get the information needed to manage the business."

The future time-sharing market will boil down to two types of customers, he predicted: smaller businesses who do not want to build DP departments and other com-

panies making involved transitions to new information systems designs. Under the second scenario, "you can break the problem [of implementing a new information system] into two parts," Bazoian said. "You spend the first part getting the users educated and trained while running on time-sharing, then you move

the new system in-house."

With that justification, Xerox will increasingly use its time-shared experience as leverage to convince buyers to go with its packaged software, Bazoian said. The company recently overhauled its equipment devoted to time-sharing, replacing Xerox Sigma computers with IBM 3033s and a 3083 mainframe

and an Amdahl Corp. V8.

At the same time, the company is targeting packaged applications to constitute nearly half its business by 1986. "Two-and-a-half years ago, when software was a small part of the business, I said 35% to 40% of our business could be software within five years," he said. "So far we're right on that track."

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## Super Shorts

The North American Telecommunications Association has formed two new committees — the Regulatory and Legislative Policy Committee and the Centralized Operations Group Steering Committee — to address deregulation and divestiture issues.

Northern Telecom, Inc.'s SL-1 digital business communications system has been

granted type approval by the Japanese government telephone authority. With type approval, SL-1 systems may now be used in the Japanese public telephone system.

Ramtek Corp. has formed a marketing administration group to handle all administrative functions for the firm's recently realigned sales and marketing operations. Linda Kroening has

joined the firm as manager, corporate communications, and Dan Burkhalter will head up marketing administration.

Southern N.E. Telephone has exercised its option to buy 40% of Digital Termination Services, Inc., the firm authorized by the Federal Communications Commission to build and maintain local network facilities for

high-speed digital transmission between customers in 99 large U.S. cities.

RCA Service Co. will market Hitachi America Ltd.'s digital communications controller under a recently signed \$8.5 million agreement. Promotional efforts will focus on Hitachi America's hotel/motel software application of the digital private branch exchange.

Intersil, Inc. and Tele-dyne have settled the copyright infringement suit, filed by Intersil in U.S. District Court in Aug. 1982 relating to its line of analog-to-digital converter integrated circuits, with an agreement to exchange license rights and technology.

## Executive Corner

• Steven D. Dorfman has been appointed president and chief executive officer of Hughes Communications, Inc.

• Guy R. Tann has been appointed president and chief operating officer of Automated Processing & Development Corp.

• William L. Sydnies has resigned from IBM to join Franklin Computer Corp. as vice-president of engineering. Sydnies was development manager for the IBM Personal Computer and program manager for entry-level personal systems with overall management responsibilities for engineering, manufacturing and marketing at the time of his departure from IBM.

• Howard A. Laffier has been appointed president of ITT Business Communications Corp., formerly ITT Terryphone, in Harrisburg, Pa.

• E.J. Watson has been named president of National CSS, Inc.'s systems software division, TSI International.

• John F. Horton has been appointed vice-president, federal systems operations, and Michael S. Battaglia, vice-president, mid-Atlantic operations, for Sperry Corp.'s computer systems operations.

• Gerald E. Rodts has been promoted to vice-president, marketing programs, at Prime Computer, Inc.

• Philip P. Carvey has been named vice-president of research at Zitel, Inc.

• Paul F. Brannels, controller of M/A-COM, Inc., has been named a vice-president of the company.

• AT&T has appointed Richard A. Romano vice-president, regulatory affairs, and John F. Fischer, vice-president, industry affairs, for the new organization that will provide long-distance and international services following the Bell System divestiture on Jan. 1, 1984.

• IBM Vice-President Paul J. Kofmehl has been elected president of IBM World Trade Europe/Middle East/Africa Corp.



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# France's Social Agenda For *Le Computer*



By Rex Malik

If the Japanese are setting the technological agenda for computing in the next 10 years, the French can be said to be fixing technology's social schedule.

Technology in France is not being left to evolve by market forces. The country is anticipating its future and steering the industries involved down specific routes. The French have an end in view, a society in which technology and industry serve social goals. These ends are quite different from those that France and other industrial societies have pursued in the last three decades.

France is the one country that has managed to deeply involve its politicians, industrialists and civil servants in the

opportunities and complex problems that computing raises. These leaders are trying to work out what can, will and should be different about society in an era of inexpensive mass computing. The prevailing view is that computing is turning out to be so fundamental that it is transforming industrial society. Yet no one is quite sure exactly how and where the transformation will take place. The French feel they must investigate technological change, organize and plan for it.

But why should France take the different path? Cannot market forces be expected to direct society here as elsewhere? Few of those leading France have patience with this

## IN DEPTH

approach. The majority of those in power point out that at the development, manufacturing and sales levels, the world of computing is dominated by American companies with their large home market to support them. Thus, the world computer marketplace does not provide a competition between equals. France, said a noted French thinker discussing technology, is the capital of the Latin countries but a province of the Anglo-Saxon countries.

The French have a different view about where computing leads. There is remarkable agreement that computers challenge the conventional notions of work in an industrial society and the income distribution related to that work.

France produces volumes on the coming information society. From "L'informatisation de la Société" (produced at the request of then President Valéry Giscard d'Estaing) through Jean-Jacques Servan-

Schreiber's *The World Challenge*, the writers have in the main been active members of the French establishment. They are not, as elsewhere, simply independent believers that change is afoot.

## Engineering Base

If the French are consciously going in a different direction from everyone else, they must have the required engineering base on which to build. Consider the country's

achievements: the super-speed Train Grand Vitesse (TGV), the Super Phoenix (the world's first and only commercial breeder nuclear reactor) and the Concorde supersonic airliner. France is also the country of CIT Alcatel, one of the world's largest exporters of digital switching equipment. It is the country of Ada (the U.S. Department of Defense and North Atlantic Treaty Organization standard language) and of mass-market videotex.

guage) and of mass-market videotex.

So technological competence is not the issue — the French demonstrably possess that. Neither is the commercial competence of the French computing industry in question. IBM France continues to dominate the large systems market and has its main production center outside the U.S. for the larger 30 series CPUs at Montpellier in southern France. However, parts of CII Honeywell Bull, the flagman manufacturer of French mainframes, have not done badly on home or world markets.

The capability and the presence are also there in almost all other sectors of the technology and industry. What French businesses often do not have is a large enough market share. In mainframes, the French point out, 90% of the government market is held by foreign-owned manufacturers, primarily IBM.

If the problem that faces the French is not one of technological competence but rather of market share, are there any specific reasons why this problem should exist?

One of the key problems relates to tradition. The French strength has been to create very large systems that can be sold to administrations and large organizations. Renault and Moulinex apart, the French have been good at engineering when the market consists of tens of customers, weaker when the market is in the hundreds of units and very weak when it is in millions — except where the home market is protected by specific technological restrictions.

This weakness exists because until recently the elite went into organizations and administrations attuned to dealing with other organizations and administrations. Thus, TGV is exactly the sort of product the French can do

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Stratus's hardware design means that fault tolerance is invisible to your application programs and users. You can even move previously developed applications to Stratus with NO CHANGES AND NO PERFORMANCE LOSS for fault tolerance. In contrast, the software-based systems require complex, performance-stealing software in order to implement fault tolerance. This means that new programs are more difficult to develop, they run slower, and existing programs can't be

run without major changes.

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## IN DEPTH

well and have been structured and able to exploit.

So why don't the French simply continue to concentrate on such products? Well, they do not intend to throw these advantages away, but seek to add to them. In his New Year message, President Francois Mitterrand discussed the industrial themes of the current French five-year plan. Certain products stand out: the Airbus commercial airliner, TGV and satellites, all of which are within the

***'Members of the French managerial elite, both in public and private sectors, have had similar education, usually including a good dose of math and some engineering. Any high flier will have spent time in both commerce/large-scale industry and the civil service.'***

French technological tradition. The fourth, however, is a personal computer, by which Mitterrand meant

more than a competitor to Apple Computer, Inc.'s Lisa, the IBM Personal Computer and Sinclair's Spec-

trum. He meant a product coupling computing to communications.

#### French View of Planning

Before looking at specific products, it is important to understand the French approach to planning in a free society, practiced since World War II. It is not planning as conceived elsewhere, either East or West. The French draw the major actors in the main sectors of industry into the planning process through consultation.

In addition, if a company wants access to loan funds at preferential rates, research and development aid, government support generally and access to the home market, then it would be foolish not to follow the lines laid down by the government.

Socialism in France is different from socialism in some other industrialized free societies. The socialist parties are the inheritors of the French Revolution, not its opposition. They are the party of the establishment at its most basic, not the challengers.

Four of the five largest electronics companies have now been nationalized, the fifth being still-independent IBM France. Nationalization has been much debated, fought by the political opposition as well as corporate owners and shareholders. But nationalization has not caused the upheavals that might seem likely if applied elsewhere — in the UK or U.S., for instance.

The French are accustomed to successful, profitable nationalized industries. Ownership in the major industries has not since World War II borne the importance attached to it elsewhere, either under free enterprise or communism. Ownership has not presumed control.

This attitude comes in part from French traditions. "Nothing is allowed until it has been expressly permitted," the saying goes. The

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# FRANCE LOOKS AHEAD IN DEPTH

In Depth/6

## The Velizy Videotex Experiment

The Velizy Teletel trial began in March 1981, though all terminals were not installed until the following autumn. For nine months beginning in October 1981, every call made on 2,200 of the terminals was logged.

Once the service (nearly 200 data bases plus messaging and some home banking and transaction services) lost its novelty status, some surprises appeared. In the early days of videotex, it was assumed that in the wider public market, users would go to the terminal with a specific question, find an answer if there was one and then switch off and go on to do something else. Average length of call would then depend on the skill of the user at finding his way around the data bases. This time spent was expected to

compare to the average length of a telephone call.

Instead, length of calls at Velizy average a surprisingly long 15 minutes. The average call connects to between three and four separate data bases and services and accesses 47 frames.

Households were categorized according to socioeconomic criteria into seven groups. Average users made about two calls a week (6.2 to 9 calls a month), but executive users made between 14.8 and 16.2 calls a month. Interestingly enough, calling time remains roughly constant, no matter who the user.

Teletel traffic peaks at 1 p.m. (lunch time), 7 p.m. and 11 p.m. on weekdays. Peak day throughout France is Saturday, while the late-night peak disappears on

weekends, and there is a low point around Sunday lunch time.

The great surprise has been the messaging service. This feature was put up late in the day, yet at the end of the trial was seen to be the second most popular service, just behind the news and general information data bases.

Users have demonstrated an interest in joining common interest groups. The Velizy service required that subscribers become registered users of what was called the M3V service, and six out of seven users did so. Users could form their own interest groups, and by the autumn of 1982, 340 had been formed, of which around 100 could be called serious. By that time, the system was handling an average of 1,500 messages a week, all local traffic.

lion of it for R&D and FF 1,000 million in repayable loan capital.

Much of the state funding will go in early. The group is committed to a 17% growth rate over the short period. This data is not the sort companies normally make available. So why is it available now?

The planning tradition has long meant the French have been more open about the middle to long term than most societies. The indicative planning method does have a large element of sticks and carrots to it, and for either to be effective, there must be widespread public knowledge of the plans. The socialists have strengthened this tradition. All nationalized companies must announce their plans and growth targets as well as sign an agreement with the government, which is usually then made public.

### Fillere Electronique

But the consultation process now goes further, leading to the reasons why life for the industry's political overseers and managers is getting more complex. First, there is the view that the computing industry as traditionally conceived no longer exists. The future is becoming more

planning and other intervention mechanisms have long meant that whoever is in ownership, French civil servants are in power.

To confuse matters even more, the civil servants in power are not necessarily at the time actually in the civil service. The French managerial elite, both in public and private sectors, consists of people (almost all men) who went to the same handful of competitive entry schools and have similar educational backgrounds, which usually include a good dose of math and some engineering. They run commerce/large-scale industry and the civil service almost interchangeably. Any high flier will have spent time in both.

It is understandable why French civil servants say that nationalization does not in principle much change their relationship to industry. Nationalization does, however, have some practical consequences: that relationship becomes simpler in some respects and more complex in others.

Life is simpler because the state now gets control over investment policy and can steer and reorganize more easily. How firms there will still be competition. There will be no guarantees to state-owned companies that they will win the state-sector half of the electronics market irrespective of price or performance. The gamble here is that the state sector, given enough time to stand on its own feet, will be competitive. It will be given the long-term resources to do so.

### Growth Targets

Consider CIL Honeywell Bull. The government first reduced the Honeywell share to less than 20%, then reorganized the company, concentrating linked activities into four subsidiaries.

The government has ploughed in funds on a long-term basis. The CIL Honeywell Bull group will now invest 8,200 million francs (more than \$1.1 billion at the current exchange

rate of about 7.3 francs per U.S. dollar) over the years 1983-1986. Of this, FF 500 million will come as a state funding capital injection, FF 900 mil-

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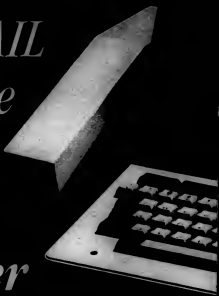
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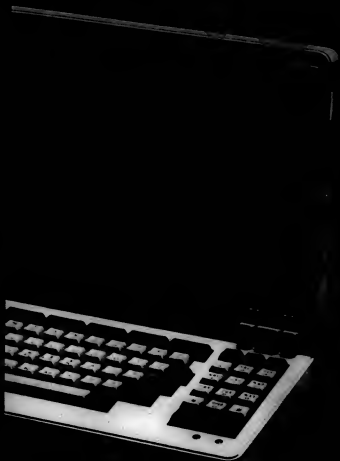
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# TANDEM

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## IN DEPTH

digital right across the electronics industry, and so it is all being viewed as one industry referred to as the Filière Electronique. "Filière" resists precise definition. Think of it as the totality of French electronics interests plus those interests in other "ologies" (such as psychology) where advances must be made if a new product is to be marketed successfully.

Statistics as yet only account for the traditional electronics industry. In a widely publicized speech late last year, the key government figure with responsibility for the Filière, Jean Claude Hurel, director of Direction Industrielle Electronique et L'Informatique (Diel) described the industry thus:

- The 1981 production of the Filière was FF 96 billion, counting for 3% of French industrial production.

- It employed 318,000 people directly and more than 260,000 indirectly.

- The trade balance was in deficit by FF 6 billion and would reach FF 18 billion in 1986, measured in 1982 francs.

- Employment was decreasing and would continue to do so.

The first aim of policy was to reverse these trends and turn a growth rate running now at 3% into one of 9%, at the same time seeking to increase employment by 80,000 and expanding the Filière's share of the country's industrial production base by 1%.

Putting together investment plans in the Filière over the five coming years, investment would be FF 140 billion, of which FF 40 billion would be in new funds from the state.

### State as Decision Maker

What is different in this French approach is the curtailment of managerial independence implied in the execution of government policy. The state is master of the decision-making process. Also, the practice emphasizes prior consultation, particularly with would-be users. The methodology relies on pilot projects, national development programs and market trials of partially developed products.

The Postes, Telegraphes et Téléphones (the publicly owned telephone and telecommunications company), which is developing videotex, is carrying out some 40 separate pub-

lic trials (see box on In Depth/6). The PTT's experiments range from the most general, public call box videotex, to the most specific, such as doctors on-line to a consultative diagnosis system.

The goal in all major electronic products is to be technologically independent of the U.S. and certainly of Japan.

What the French seek is the number three slot and with it the leadership of Europe. They have, in fact, al-

ready reached this rank in terms of volume and value of production, but their industry is not as well balanced as they wish. Weaknesses show in semiconductors, some consumer products and large computers.

Much of the French attention focuses on rectifying these weaknesses. The methods are traditional: investing, training, striking joint deals (particularly in semiconductors and mostly with U.S. companies) and trying to increase the number of orders.

And they are mounting studies. A recent study attempted to help decide whether France should try to develop very large computers to compete with Cray Research, Inc., Control Data Corp. and the Japanese. (The answer, it is said unofficially in Paris, is yes, and funds will be applied to that end.)

What the French are really about is the future: new products and systems. Here their ideas are most interesting. French literature about the

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## IN DEPTH

microelectronics revolution expressed the belief that the technology can be developed to create a society in which people are given hope, choice and significant roles to play. Lives need not be dominated by hard routine.

This motivating belief may sound fuzzy, almost metaphysical, yet it should not be dismissed. The statement of principle is built into the French approach. That is the way they think and, given the chance,

that is where they will start.

So how does a country of 55 million use technology to create a new society? The people themselves decided in favor of the two main socialist planks, consultation and decentralization.

Regarding consultation, they are trying to develop mechanisms at many levels. First there is the centralist government itself, which, as any other, has grown up with separated ministries, each with a specific

area of responsibility, such as health or education.

There is a political belief that all facets of government should march in step. This belief is not new — all governments, not just those claiming to be reformist, would agree with that. However, if you take the view that a technology cuts across the mechanisms of government and society, then you had better organize yourself accordingly.

So the Filière Electronique is not

being allowed to walk in isolation. There is an interministerial steering group and the civil service machinery below it, a group that aims to ensure that if resources are used to develop a product, there will be a commitment to trials and usage early on.

#### Levels of Consultation

Also at the central government level, the French try to discover not only what people want but also what is affordable over what time period. Thus, the government has involved itself in many things, among them a recent major international conference on technology and society in Paris attended by everybody from the French president to artists and entertainers to Alvin Toffler.

This conference was only the tiny, visible part of the consultation going on. Consider now two other major actors, the Agence Development de l'Informatique (ADI) and the Direction Generale Telecommunications (DGT), the PTT's master.

The ADI, or computing development agency, is a government organization with a FF 360 million budget meant to spearhead the effort in computer-related research by working with R&D laboratories, the industry and users.

Spearhead is the operative word, for the ADI is not meant to be a 100% funding agency but rather an initiator and catalyst. The ADI is seeking to involve the many state-sector laboratories (which include 2,400 professionals in computing and electronics) with industry and industrial laboratories, both public and private, which employ between 5,000 and 6,000 more (BM France employs about a quarter of these). In turn, the government hopes to involve both with prospective users earlier on.

The ADI seldom gives as much as 25% of the funding over the total life of a project. The rest must come from R&D budgets of the companies taking part, from user ministries on behalf of their clients and from the user clients themselves.

Much time is therefore spent trying to define priorities, and the ADI finds itself working closely with almost all other ministries. But the ADI also works at a broader, grass roots level. It is involved in more than 100

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## IN DEPTH

different sectoral plans covering much of French life.

The annual report lists ADI involvement in nearly 70 projects, which will mean installing nearly 90,000 computing devices in the next year or so.

And the ADI, too, is tied into many of France's chambers of commerce, which play a much more official role than elsewhere, for they are involved in the industrial training programs in their own areas, which

are supported by government.

So the ADI finds itself involved in policy making at both the broad national and narrow local levels. At the broad level it is helping to fund and organize a number of national R&D projects in such areas as computer-aided design/very large-scale integration, software engineering, computer-aided instruction, automatic translations and visualization.

Automatic translation here as in Japan has a high priority. ADI head

Charlie Garraiges says the problem is not electronic. The advances required are mostly in the soft sciences, including linguistics and psychology. Work is being funded in these areas. Garraiges notes a need to develop new screen technologies.

Garraiges is a rising star. A recent report to the president proposes that what is needed is not just a national policy to link researchers, industry and users, but also a major guiding agency, one that could provide an

umbrella for the 30 or so government organizations and quasi-government organizations involved in computing policy and R&D. Currently the ADI appears to be that eventual umbrella organization and Garraiges the man to run it.

Garraiges is not afraid of speaking his mind in public, even if many find his remarks not particularly palatable. "The use of big computers is now a waste of time most of the time," he says. "People do not understand what they can do with computers — not only how, but for what."

He goes on, "We have also to produce products not in the same way as in the past. But our problem is that with much of the possible new products, we do not know how to evaluate." He makes it clear that he considers the problem general and not confined to France.

#### Communications Concentration

DGT and the French concentrate on on-line digital products: telephones, videotex terminals, TV receivers, video recorders, copiers that can act as output printers, facsimile transceivers and microcomputers with communications interfaces. Jean Pierre Chevenement, the minister of research and industry, has often said that the future lies with telecommunications and new mass-market services using digital products.

How can France build up that part of the Filière? First, the problem that faces European electronics is that a continentwide market on the U.S. model does not as yet exist, and there are few European multinationals in the electronics fields.

The French would like to create French-owned multinationals. For months the nationalized Thomson electronics group tried to buy control of West Germany's Grundig in order to get more than 50% of the West German TV receiver market. Thomson was eventually rebuffed and settled for control of the much smaller (4,000 employees) consumer electronics company Telefunken. The alternative multinational route is to buy small companies in growing markets, such as the U.S., a trend particularly noticeable in software.

#### Aiming for Volume

France's second effort is to build up the industry that exists, both old and new. The goal is volume, to be

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## IN DEPTH

built in part by exporting, restructuring and also merging interests.

But what is the point of volume without a substantial home-market share? And how is that achieved? In the

area of telecommunications, France has an instrument in place with great purchasing power — the PTT.

France is the country where it was once said that half of the population was

waiting for a phone while the other half waited for a dial tone. Those days are gone, for the French have been modernizing rapidly. Phone installations have increased more than fivefold

in less than 15 years and are expected to double again in a decade.

The DGT controls a surprisingly modern nationwide organization in the PTT, which is run by much

younger people than is the norm elsewhere — people with few commitments to the past. The PTT operates a vast, modern marketing and service organization.

## Growth of Videotex

So what is the PTT to market that will feed back into French as opposed to foreign industry? Enter now the on-line world of Telematique and those twin videotex technology products, the electronic telephone directory and Teletel, the French version of videotex in a general information retrieval/transaction-processing role.

Both are based on an alphanumeric keyboard and black-and-white CRT terminal, which come with the phone rental.

The electronic telephone directory has now been launched out of the trial stage. It is being extended in Brittany, then follows the Paris region and other main urban areas including Marseilles.

So far, the PTT has placed orders for 600,000 production-version terminals, the smallest posttrial order being for a 100,000 run.

No such decision has yet been made for the launch of national Teletel services, though all signs are in its favor. The reason has much to do with the new French passion for widespread consultation. Surveys take time.

And the French do not simply consult those who might use the service, but also those who might be otherwise affected. They set up an oversight council that

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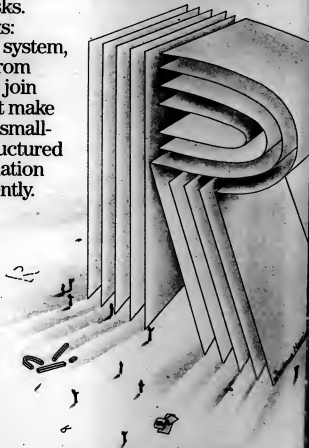
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## FRANCE LOOKS AHEAD

In Depth/18

### IN DEPTH

represents politicians, the administration and consumer and commercial interests, including local newspaper publishers who could be adversely affected. This preview process naturally slows

down decision making.

That the French eventually will press on with a national videotex service is a foregone conclusion, for much hangs on the development of this service, includ-

ing electronic banking.

Now enter the smart card, that credit card-size piece of plastic containing an 8-bit microprocessor and initially some 4K bytes of memory. The card had a small role to

play, involving 300 users, in the Velizy videotex trial (see box on In Depth/6) and is now to have a much wider bank-sponsored experiment in three large cities. Initially, 125,000 cards usable in more

than 600 shops will be issued. And France is in a hurry. The banks have said they will decide on the future of smart card-based point-of-sale services by the end of the year.

The banks have economic motivation for going ahead. What they seek in large part is to replace the check. Currently some three billion checks are issued annually in France, 80% of them for sums of less than FF 100, yet each costs an average of FF 5 to process. The expected transaction cost for a similar volume of smart card-based payments is less than FF 1.

The smart card and videotex hang together. Few people would be willing to switch to a smart-card system unless they could keep their own private record, which in this case requires a card reader—a terminal.

Once the terminal finds its way into the French household, other services will be tempting to add. Indeed, the terminal's cost can only probably be justified if you hang a complex of services on it.

But the world in which electronic directories, videotex and the smart card transform France is also the world of other products and services. A different environment is created in which the

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microcomputer and the picture-phone play a part.

The Centre Mondial (World Center for Computer Science and Human Development), based in Paris under the presidency of the French writer and politician, Jean-Jacques Servan-Schreiber, has become an instrument of French policy, moved administratively under the DGT. The French have announced they will pull out of the United Nations-affiliated International Bureau for Informatics, the Third World and computing development organization that relies on France for 30% of its \$8 million budget.

The French say that with a tightened budget, they prefer to put what money they have behind the Centre Mondial.

#### Marseilles Trial

The Centre Mondial can be viewed working in the Marseilles trial, currently awaiting the arrival this summer of French-built microcomputers.

The trial is based on the proposition that if the future is bound up with computing, then it is necessary to find out what people want computers to do for them and exactly what computers can do. Above all, the trial will study how people interact with systems.

The chosen area is a Marseilles quartier called Belle de Mai, urban and densely populated. It is an area representative of France's older cities and thus a good test site. In this white- and blue-collar working class area, most people work close by. Nearly half the workers walk to work at the docks, railways, the PTT and many small businesses.

For this population of 17,000, 1,000 microcomputers will be installed by the end of 1984. Some schools already have access to computers as do many businesses.

Initially the systems are being handed over to those who want them on long-term loan. What the average Frenchman will do with the terminals no one is sure because the trial is also the first large-scale trial of the Logo programming language with an adult population. Logo was designed for novice users and is noted for its ease of use and graphics capabilities.

#### Fiber Optics System

Down in Biarritz, the French are creating the world's first large-scale local communications system based on fiber optics distribution.

The PTT will seek the first 1,500 users out of a planned trial base of 6,000 from existing telephone subscribers.

The service will provide the user with a picturephone complete with ambient-light video camera, which can be used to show either a face or documents. Twenty-seven channels are available: 15 video, 12 audio.

This picturephone terminal is expected eventually to access videotex

***The French believe it is the duty of the state-owned commercial structure to take the lead in providing the infrastructure of society. Opinion leaders of both left and right, however, are quite well aware of the dangers of letting the state have too much power.***

services. Here is the beginning of an all-purpose picture and text interactive terminal, one that can add mem-

ory and output devices over time.

Such projects reflect the French belief that it is the duty of the state-

owned commercial structure to take the lead in providing the infrastructure of society. Opinion leaders of both left and right, however, are quite well aware of the dangers of letting the state have too much power.

Consequently, there is a strong belief that the state should do what it can to provide that infrastructure, make its contribution to services where only the state can provide them and then let the rest of society

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## IN DEPTH

follow its own inclinations in providing the desired services.

Three classes of service exist. First, there is government services information, including guides to citizens' rights. Typical questions answered are: What time do government offices open? What are the local planning regulations? What do I do if I have lost my ID card?

Next there are the infrastructure services, sometimes provided by state-owned organs as in the case of

the PTT's telephone directory, or by private industry as in the videotex system for travel agents.

Last come the bulk of the services provided by the private sector. Some are national data bases, others regional or local.

Consider one regional and local example, Marseilles' *Le Provençal*, a newspaper that was setting type by computer as far back as 1967 and has been terminal-based since 1972, a dedicated IBM user. Management ex-

pects there will be 250,000 electronic directory terminals installed in its coverage area by the end of 1984 and is planning for a base of 600,000 by the end of 1986. It is aiming to provide a large number of full-text, direct-access services, many of them aimed at the commercial market.

For the general public, *Le Provençal* is considering publishing a regional electronic newspaper as well as many data bases. One of those, called Hippothèque, is a horse-racing

data base that specifies the runners, the jockeys, the state of the track, the form and the odds for major races.

## Computing Time Bomb

Not far away in Marseilles, however, sits a computing time bomb—or, if not the bomb itself, the people who are going to activate it. Centre d'Etudes des Systèmes d'Information des Administrations (Cesia) is a government department-straddling consultancy headed by Jean Salmons. Cesia's budget is small, a little over FF 100 million a year, coming from a mix of central and local government funds. But the name of the game once again is leverage: Most of what Cesia recommends is acted on under ministerial budgets.

Cesia consults about computerization of government in a context that lays down first that there must be more decentralization, next there must be greater public access and, finally, there must be greater administrative efficiency.

Salmons observes that computing has not so far changed administration, just computerized existing processes. "We need to go beyond that," he says. "The time has now come to go back to the start and ask the question, 'What is the new way of performing the administrative task?'"

"It is urgent," he says, "because the role of government administration is bound to increase. The reasons are concerned with the current economic crisis, increasing complexity of modern life and an increasing demand for social services."

Yet at the same time, a nation that wants to be competitive has to decrease the weight of the administration (and not just in government) for those who have to deal with it.

Cesia works in four areas: the information system within the administration, the internal information flows within that administration, the information flows with outside organizations and the information flows with the citizen.

It is a tricky role for outsiders to play, and it can only work with strong ministerial backing. Cesia tends to have the tough jobs thrown its way.

For instance, Wang Laboratories, Inc. nearly obtained a large word processing system order recently from the Ministry of Culture, but the Ministry of Research & Industry was unhappy. Cesia did an analysis and found that 90% of the need could be satisfied by French equipment and that the other 10% was not urgent.

What would Salmons have advised if the whole project had been urgent? He would have told Research and Industry that there was no option but to go ahead with Wang. "Our task is to be administratively credible," he says. "What we have done is to bring the ministries together to try to build a five-year plan, to try to get them to specify what their requirements are expected to be. And then we are trying to

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## IN DEPTH

put that together with the plans of French manufacturers."

It would be nonsense, he says, if, in building up industry, the government did not try to steer it toward the fu-

ture national home market.

Cesia's work involves many projects. Some are obvious. Consider the small company with its annual declaration, which currently it must make four times to

four ministries. Can that be turned into one declaration by making those ministries exchange the data between them, particularly as they each keep it on magnetic tape anyway?

The savings on data input costs should be formidable, for, as Salmons points out, every time data is input on France's 22 million workers, it costs FF 2 per worker entry.

But the real time bomb lies in a decree that has been awaiting implementation for some time. That decree states that all ministries will have to list and describe all public files.

This is freedom of information with a vengeance, for the project will deal with live administrative files. Salmons says he expects the decree to be implemented, and once it is, the process is irreversible. He points out that the process of computerization will lead to computerized records, and eventually, information catalogs listing all public files will become easily available in a society in which the majority have terminals. Once people have access to that information, they will not willingly give it up.

An administration open to a society, possibly via videotex? It is a temptation to ask whether the politicians have foreseen the impact. Indeed, have any conception of what they are letting loose.

## Two-Way Street

Technology is transforming society, but also society is transforming technology. A society dependent on others for technology's evolution is not free and independent. So control of technology's development is critical to controlling society's orderly progress.

But above all, one has to remember that France was the country of the French Revolution, which did much to transform the map of the world. The French forget little, the revolution least of all. They think they have seen what the next revolution is going to be about, that it is digital technology-based, and they believe it will have just as massive social, economic and political consequences.

What is new in France is that society is setting in the road toward organizing itself to cope with the revolution, to accommodate the technology within a short time scale. One does not have to agree entirely with the French analysis to applaud the attempt.

## About the Author

Res Malik is a London-based freelance writer.

A 25-year veteran of computer journalism, Malik was a consultant to the British Broadcasting Co. for its computer literacy series.

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# NCC '83: The Emerging Information Age



Anaheim Convention Center

## NCC '83

### Special 'Computerworld' Preview

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By Katherine Hafner  
CW Staff

ANAHEIM, Calif. — The data processing industry in all its enormity will descend en masse here next Monday.

This year's National Computer Conference will be held at the Anaheim and Disneyland Hotel Convention Centers. The conference will feature the biggest NCC exhibit floor ever — 320,000 square feet of air-conditioned space populated by displays from 635 exhibitors — in the Anaheim Convention Center and in six temporary structures on the convention center's parking lot.

### Early Registering Brings Hopes Of Shorter Lines

While registration for the National Computer Conference usually confounds attendees for hours on the Monday it opens, the American Federation of Information Processing Societies, Inc. (AFIPS) hopes that it will have pared down the crowd by that day.

This year for the first time, attendees who live close to the conference will be able to register in advance, according to Dennis Smoot, AFIPS' registration manager. The registration tent at the Anaheim Convention Center will be open from Saturday, May 7 through Sunday, May 15. Registration hours will be 9 a.m. to 5 p.m., May 7 through 14, and 2 p.m. to 6 p.m. on May 15.

For those traveling from afar to the conference and arriving on Sunday, May 15, the traditional "early bird" registration will take place from 2 p.m. to 6 p.m. (An Early Bird Reception will be held that evening from 5 p.m. to 7 p.m. in the Grand Ballroom at the Anaheim Marriott.)

Those who do not register early will have to face the crowd starting at 7:30 a.m. opening day. There will be separate lines for those who have not registered at all and for those who preregistered too late to receive their badges, Smoot said.

While vendors have been allowed to distribute quite a few exhibitor guest passes in the past, this year will bring the advent of the vendor discount ticket, which chops \$10 off the regular registration price. "With these coupons, we hope to cut back on the number of exhibitor registrations," Smoot said.

Exhibit guest passes and exhibit discount coupon lines will be color-coded red and blue, respectively, to match the colored logo on the back of each pass, Smoot said.

On-site registration for NCC '83 will cost \$125. If you have preregistered, it will cost only the exhibit floor, the charge is \$35.

If you can't face the crowd on Monday, registration will take place each day from 9 a.m. to 5 p.m. until Thursday, when it ends early at 4 p.m. Estimates on how long the wait will be were unavailable at press time.

## Center in Anaheim

The theme of this year's show is "The Emerging Information Age: Computers, Communications and People." The conference will include more than 80 technical sessions in nine program tracks and 22 Professional Development Seminars.

NCC '83 is sponsored by the American Federation of Information Processing Societies, Inc. (AFIPS), the Association for Computing Machinery, the Data Processing Management Association, the IEEE Computer Society and the Society for Computer Simulation.

The show's two main coordinators — Conference Chairman Donald B. Medley and Program Chairman Allen N. Smith — along with the full AFIPS staff and some 65 volunteers have been working for more than a year coordinating this year's show.

The nine tracks of the technical program focus on software engineering, management/education, data base/distributed systems, human and social issues, office automation, decision support, hardware, telecommunications and applications and personal computers.

The 13 full-day and nine half-day Professional Development Seminars will be held at the Hilton at the Park, across the street from the Anaheim Convention Center. The seminars

### Relax: You Can Register There

If you've let time get away from you, it's too late to preregister for the National Computer Conference. But take heart — you may register on-site for NCC '83.

On-site registrants pay the full conference price of \$125, which allows them entrance to the technical sessions and to the exhibit floor, as well as a hardbound Conference Proceedings.

Registration hours are 2 p.m. to 6 p.m. on Sunday, May 15; 7:30 a.m. to 6 p.m. on Monday, May 16 through Wednesday, May 18; and 7:30 a.m. to 4 p.m. on Thursday, May 19.

Early bird registration is available this year for those who live close to the conference site. From Saturday, May 7 through Sunday, May 14, registration hours will be 9 a.m. to 5 p.m. in the registration tent.

### Hotel Reservations

#### Being Taken by Phone

ANAHEIM, Calif. — The Anaheim Housing Bureau is now accepting hotel room reservations by phone from those planning to attend the National Computer Conference.

The housing bureau can be reached at (714) 999-8939.

Attendees who were previously unable to reserve rooms at the hotel of their choice may find rooms available now because of last-minute cancellations.

Some hotels close to the convention center include the Disneyland Hotel, Hilton on the Park, Magic Carpet, Cavalier, Anaheim International, Zebys, Candy Cane and Galaxy.



# to Hold the Biggest NCC Exhibit Floor Yet

are designed to provide information processing professionals with a broad exposure to technical trends, office automation strategies, innovative management and motivational programs and related industry management issues. The seminars cost \$75 for the full day and \$45 for a half day.

## Imlay to Keynote

In a break with tradition, this year's conference will hear only one instead of three keynote addresses. Slated for the Anaheim Marriott, the keynote will be delivered by John P. Imlay of Management Science America. Imlay's speech, titled "The Information Transformation — A Study in Survival," will focus on the growth of information technology.

Imlay will look at the history of rapid change in the DP industry. He will discuss the current status of computer manufacturing, communications, computer services, office automation, personal computing and software.

In examining the future, Imlay will consider the effect computer technology will have on the quality of life in the year 2001 and beyond and present a series of "Declarations of Survival."

The Harry Goode Memorial Award, established in 1964 to honor outstanding contributions to the in-

## Six Temporary Buildings Constructed

ANAHEIM, Calif. — The commitment to hold the National Computer Conference here is a deep-seated one, according to Jim Kroell, director of conferences for the American Federation of Information Processing Societies, Inc. (Aflips). Unfortunately, however, the Anaheim Convention Center has not grown along with the number of NCC attendees.

In order to accommodate the 635 vendors who will be exhibiting their wares at this year's conference, Aflips is constructing six temporary buildings — 60-ft wide, 30-ft high and 310-ft long — in the convention center parking lot. The structures are slated to be completed today after four frenzied days of construction between May 2 and 5, during which crews of 200

worked from sunrise to midnight.

The Sprung structures, built by Sprung Instant Structures Ltd. of Edmonton, Canada, are comprised of aluminum frames covered with plasticized fabric. They are fully equipped with electricity and air conditioning and will accommodate about 600 of the 3,200 booths at the conference, Kroell said.

This is the first year that temporary buildings have had to be erected for the conference to meet the attendance, according to Kroell who, despite the hassle and expense of constructing the buildings, considers the process of planning for NCC still enjoyable. "In this crazy business, if you didn't enjoy it, it would drive you out of your mind," he said.

formation processing field, will be awarded at the Monday keynote session. Aflips, the conference sponsor, has traditionally kept mum on the winner of the Goode Award until its presentation.

## Pioneer Day

The accomplishments of the first winner of the Goode Award, Howard Hathaway Aiken, and the Harvard Computation Laboratory will be honored on Wednesday. Pioneer Day will include two sessions and a panel discussion, held at the Marriott Hotel. The first session, "The Machines," will begin at 1:30 p.m. and

focus on the architecture, functions and components of the Mark I through the Mark IV. "The Laboratory," held from 3:30 p.m. to 5:30 p.m., will look at efforts in numerical methods, switching theory, component design, computational linguistics and data processing and their intervention in the academic program at the Harvard Computation Laboratory.

The panel discussion, "Assessment of Howard Aiken's Contributions," will focus on the technical and administrative accomplishments of Aiken. Captain Grace Hopper will be the keynote speaker for the Pioneer Day Technical Program.

NCC '83 will also include:

- An international vision center that will offer interpreters and a "friend-finder" minicomputer, which lists names and hotels of international visitors from the conference-goer's homeland.

- The Film Forum, where films and videotape productions of recent industry advancements will be presented.

- An Early Bird Reception for conference attendees on Sunday, May 15, from 5 p.m. to 7 p.m. in the Grand Ballroom at the Anaheim Marriott.

## Imlay Discusses Implication of Being Chosen Keynote

By Bill Liberis  
CW Staff

The selection of a software and services industry spokesman to keynote the National Computer Conference this year is a tacit recognition of software as the vital part of the future of computing.

So said the man chosen as keynote speaker, John P. Imlay Jr., chairman and chief executive officer of Management Science America, Inc. (MSA) and toastmaster of the software and services industry.

Imlay said this year's NCC marks the first time that a representative of the \$6 billion software and services sector has been chosen as keynote speaker, a distinction that "is flattering to me and very flattering for our industry."

The unpredictable Imlay, who once appeared on stage with a live tiger to address an industry group, promised in a pre-NCC interview to deliver more of the same brand of humor that has characterized the hundreds of speeches he has delivered worldwide over the past several years.

His keynote address, "The Information Transformation — A Study in Survival," will feature an overview of the information industry, as well as a call to establish a National Information Committee to develop an information strategy for the U.S., he said.

If formed, this committee, supported by the Association of Data Processing Service Organizations, Inc. (Adapso), will initiate a two-year study to "give government a window

on what information technology will be like in the 1990s and then have government redirect its education initiatives accordingly," Imlay will tell conference attendees. Similar calls for government-sponsored initiatives have been heard in recent months as U.S. vendors, such as the software companies represented by Adapso's membership, have become increasingly aware of the competitive international marketplace in which they find themselves operating.

His address will further explore the future of computing, its impact on the quality of life and whether it will be destroyed or enhanced by information technology. Imlay will also attempt to outline the changing role of computers in the corporate setting, where "computing is fast becoming a competitive weapon that will hold a different role where the corporation cannot succeed without proper information handling," he said.

Imlay, whose own company last year created the \$100 million mark in total sales, said there will be two or three "big players" in the software industry five years in the future. These larger companies will expand product offerings, becoming more niche-oriented, perhaps with the acquisition of key niche companies.

MSA, an applications software house, will move into more vertical market offerings, such as banking, insurance and retailing, Imlay predicted.

But these big companies will not push the smaller ones out of exist-



MSA Chairman John P. Imlay Jr. at Recent Conference

tence, he argued. On the contrary, "there will be plenty of room for the smaller niche players, who will continue to reap healthy profits and increased sales from the narrow markets they work within."

Asked if he believes the image of NCC is changing from that of a hardware showcase, Imlay said, "I think it will become an information conference rather than a computer confer-

ence as such."

He said that on-line capabilities and telecommunications advances in recent years have given software vendors the opportunity to display more effectively their products, often as part of a hardware/software package the vendor is selling.

"My selection as keynote speaker is an important part of this evolution," Imlay said.

## International Center Will Offer Aid

ANAHEIM, Calif. — The language of DP can be confusing even to those whose native tongue is English. But foreign visitors to the National Computer Conference who find themselves in a fog will have a place to go if they are in need of a translator or a compatriot.

At last year's conference, about 5,000 people used the International Center. This

year, people from outside the U.S. can avail themselves of services offered by the center, which will be located in the Garden Grove Room of the Anaheim Convention Center.

Harvey Marks, chairman of special activities for the conference, will focus on the idea of the International Center as a service center. "People from outside the

'Lower 48' who find themselves encountering language and cultural barriers will be able to get translators from the center," Marks said.

The center also will provide people with contacts for currency exchange and special activities. It will be open Monday, Tuesday and Wednesday from 9:30 a.m. to 4:30 p.m. and Thursday until 4 p.m.

## Tanaka, Kemeny to Receive Awards at Keynote Session

ANAHEIM, Calif. — Three awards will be presented at the National Computer Conference Keynote Session next Monday at 9:30 a.m. in the ballroom of the Anaheim Marriott.

The Harry H. Goode Memorial Award will be given to an outstanding contribu-

tor to the information processing field. The American Federation of Information Processing Societies, Inc. (Afips), which sponsors NCC and gives the award, has traditionally kept secret the name of the Goode Award winner until it is presented.

The Goode Award was established in 1964 to honor Dr. Harry H. Goode, former chairman of the National Joint Computer Committee.

A second award to be given during the keynote session is the Distinguished Service Award. This year's recipient is Dr. Richard I. Tanaka, president of Systonics in Fullerton, Calif.

Tanaka is cited "in recognition of his many years of dedicated service to Afips and the international information processing community." Tanaka's contributions to Afips date back almost 20 years, when he served as program chairman and general chairman of Afips Fall Joint Computer Conferences in San Francisco and served on the Afips Board of Directors.

Tanaka was instrumental in bringing about a series of computer conferences with other countries. He served as president of the International Federation of Information Processing (Ifip) from 1974 to 1977.

Tanaka received his B.S. and M.S. degrees from University of California at Berkeley. He received a Ph.D. in electrical engineering and physics from California Institute of Technology in 1958. He is coauthor of *Residue Arithmetic and its Applications to Computer Technology* (McGraw-Hill).

The third award to be given at the keynote session is Afips' first annual Education Award, which will go to Prof. John G. Kemeny, professor of mathematics at Dartmouth College in Hanover, N.H. The former president of Dartmouth was selected for the Afips award because of his "visionary efforts at making computing universal for students of all disciplines."

Kemeny was co-developer of the Basic programming language and the Dartmouth Time-Sharing System. These efforts were instrumental in establishing the now widely accepted concept that a computer is an important tool for practitioners in all academic areas and all occupations.

Kemeny, who has been at Dartmouth since 1953, received his Ph.D. in mathematics from Princeton University in 1949.

# A TESTIMONIAL FOR THE BURROUGHS B20 FROM SOMEONE WHO SPENT 17 YEARS AT IBM.



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Senior Vice President, Corporate Operations, Burroughs Corporation

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CW-609

## Professional Development Seminars Slated

**ANAHEIM, Calif.** — Twenty-two full and half-day Professional Development Seminars will be offered at the National Computer Conference, the next week. They will cover computer graphics, communications, data security, data management, current issues and new technology.

The Professional Development Seminars are in-depth courses that provide training in certain aspects of the computer field, explained Linda Mooskin, a staff member of the American Federation of Information Processing Societies, Inc. In this respect, the seminars differ from the technical sessions, whose format is less instructive than informational.

The seminars will be given at the Hilton On the Park, a short walk from the Anaheim Convention Center. Full-day sessions on Tuesday and Wednesday, which cost \$75 each, begin at 9 a.m. and end at 4:30 p.m. Half-day sessions, which cost \$45 each, will take place on Monday (1:30 p.m. to 4:30 p.m.) and Thursday (9 a.m. to noon).

The half-day seminars on Monday, May 16 include "Learning From Failure," led by Robert L. Glass of Computing Trends, in Seattle, Wash.; "Plotting Your Computer Career," led by Herb Safford of GTE Data Services, Inc., Marina Del Rey, Calif.; "Organizing the DP Manager's Time," led by Ronald A. Episcopo of Software Design, Inc. in New York; "Myths of the Computer Consultant," led by William M. Rieken Jr., William Rieken Consultants, San Mateo, Calif.; "Computer and the Law," with William Fenwick of Davis, Stafford, Kellman & Fenwick in Palo Alto, Calif.; and "Word Processing," with Addie Mattox of Coopers & Lybrand in Los Angeles.

Tuesday's six full-day seminars include: "How to Select a Business Computer," led by Arnold M. Roberts of ADC Associates, Palo Alto, Calif.; "Survey of Electronic Mail Systems," offered by Susan Kay of Hannagan & Associates, Schaumburg, Ill.; "Data Analysis Techniques," by Richard C. Perkins of QED Information Sciences, Inc., Wellesley, Mass.; "Improving Productivity of Cobol Programmers," led by Dr. Robert Grauer, University of Miami, Coral Springs, Fla.; "End-User Facilities in the 1980s," led by James A. Larson, a consultant in Roseville, Minn.; and "Motivating Data Processing Professionals," led by Dr. Donald Warrick of Management Development Foundation, Ltd.,

Colorado Springs, Colo.

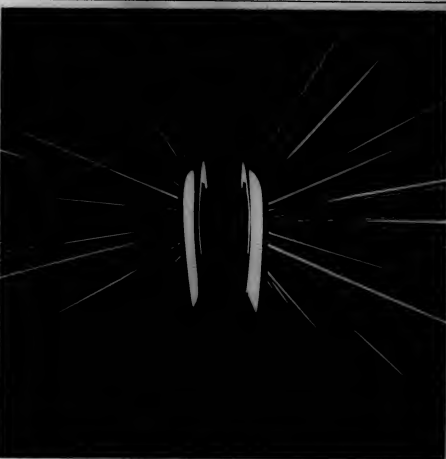
On Wednesday, five full-day seminars are slated: "Introduction to Computers: Everything You Need to Know, But Didn't Know Enough to Ask," led by Joseph Rothberg of Computer Education, Inc., Silver Spring, Md.; "Disaster Recovery," offered by Robert A. Santis of EDP Security in Waltham, Mass.;

"Human Factors in Using Computer Systems," led by Bruce Sanders, a consultant from Vacaville, Calif.; "Computer Graphics & Reporting Business and Financial Data," offered by Irwin M. Jarrett of IMJ & Associates, Inc., Springfield, Ill.; and "Data Processing to IRM: Managing the Transition," with Daniel S. Appleton of

Appleton Co., Inc. in Manhattan Beach, Calif.

Five half-day seminars will be offered on Thursday: "Letting Go of Stress," with Dr. Jackie Schwartz of Schwartz & Associates, Los Angeles; "The Power of Silent Signals," with Maxine McIntyre, a consultant in Fair Oaks, Calif.; "Project Management," with Linda T.

Taylor of Gaskell & Taylor in Los Angeles; "Synergistic Management," led by Warren Simpson of Office of Personnel Management in Chicago; and "Shortest Distance to Improved Productivity is a Circle — Quality Circle," led by J. Michael Donovan of Productivity Development Systems, Inc. in Clearwater, Fla.



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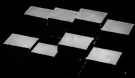
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## Schedule at a Glance

		MONDAY		TUESDAY					
		10:00-11:30 a.m.	1:30-3:00 p.m.	5:30-5:50 p.m.	8:30-10:00 a.m.	10:30 a.m.-12:00 noon	1:30-2:00 p.m.	2:30-3:30 p.m.	
SOFTWARE ENGINEERING Tom Shuster		M1-1 Communicational Skills in English Martha Evans Illinois Institute of Technology	M2-1 Artificial Intelligence Tools of the Future Roy Mason Xerox Corp.	M2-2 Career Development in the 80's Virginia C. Walker Department of Energy	T1-1 Writing Law Code: An Approach to the American Management Systems, Inc.	T2-1 Software Development: An Idea for the Future L. J. Jacobs TFTW	T3-1 Reducing Program Development Costs with the IBM System/386 L. J. Jacobs Southern Computer	T4-1 Software Engineering Techniques Arthur Pratt TEW	
MANAGEMENT/INFORMATION Bert P. Lantz Ron Lantz		M1-2 Maintenance of the Computer Dr. J. David O'Neil University of California	M2-2 Career Development in the 80's Virginia C. Walker Department of Energy	M2-3 Research Database Machines L. J. Jacobs Department of Energy	T1-2 Strategic Systems Planning James F. Ware IBM	T2-2 Increasing Productivity of Personnel Howard Rosenberg IBM	T3-2 Planning in Staffing Software Projects L. J. Jacobs Southern Computer	T4-2 Managing the Audit of Communications Systems World-Wide IBM	
DATABASE/DEVELOPMENT Don Joyce		M1-3 Current Database Machines L. J. Jacobs Department of Energy	M2-3 Research Database Machines L. J. Jacobs Department of Energy	M2-4 Organizational Information Systems L. J. Jacobs Department of Energy	T1-3 Fifth-Generation Computers James F. Ware IBM	T2-3 Relational Database Management IBM	T3-3 Modeling Enterprise Data Dr. Gordon B. Davis University of Minnesota	T4-3 Microcomputer Database Management Bryant Young University	
HUMAN AND SOCIAL ISSUES David Holzman		M1-4 Office Automation: Issues of the Art and Key Issues of the Future Amy Wohl Office Concepts	M2-4 Organizational Information Systems L. J. Jacobs Department of Energy	M2-5 Measuring Office Productivity Hammer & Company	T1-4 Computer Teleconferencing Hammer & Company	T2-4 Management and Professional Work The Matrix Group	T3-4 Approaches to DNS Business Systems Group	T4-4 Electronic Mail Walter Ulrich Walter Ulrich Company	
OFFICE AUTOMATION Daniel J. Dugan	KEYNOTE SESSION Dr. John H. Johnson IBM	M1-4 Office Automation: Issues of the Art and Key Issues of the Future Amy Wohl Office Concepts	M2-4 Organizational Information Systems L. J. Jacobs Department of Energy	M2-5 Measuring Office Productivity Hammer & Company	T1-4 Computer Teleconferencing Hammer & Company	T2-4 Management and Professional Work The Matrix Group	T3-4 Approaches to DNS Business Systems Group	T4-4 Electronic Mail Walter Ulrich Walter Ulrich Company	
DECISION SUPPORT SYSTEMS Todd Zehring		M1-4 Office Automation: Issues of the Art and Key Issues of the Future Amy Wohl Office Concepts	M2-4 Organizational Information Systems L. J. Jacobs Department of Energy	M2-5 Measuring Office Productivity Hammer & Company	T1-4 Computer Teleconferencing Hammer & Company	T2-4 Management and Professional Work The Matrix Group	T3-4 Approaches to DNS Business Systems Group	T4-4 Electronic Mail Walter Ulrich Walter Ulrich Company	
HAIRWARE Dick Langman		M1-4 Office Automation: Issues of the Art and Key Issues of the Future Amy Wohl Office Concepts	M2-4 Organizational Information Systems L. J. Jacobs Department of Energy	M2-5 Measuring Office Productivity Hammer & Company	T1-4 Computer Teleconferencing Hammer & Company	T2-4 Management and Professional Work The Matrix Group	T3-4 Approaches to DNS Business Systems Group	T4-4 Electronic Mail Walter Ulrich Walter Ulrich Company	
TELECOMMUNICATIONS AND APPLICATIONS Randy Pic Loretta Connors		M1-4 Office Automation: Issues of the Art and Key Issues of the Future Amy Wohl Office Concepts	M2-4 Organizational Information Systems L. J. Jacobs Department of Energy	M2-5 Measuring Office Productivity Hammer & Company	T1-4 Computer Teleconferencing Hammer & Company	T2-4 Management and Professional Work The Matrix Group	T3-4 Approaches to DNS Business Systems Group	T4-4 Electronic Mail Walter Ulrich Walter Ulrich Company	
PERSONAL COMPUTERS Lance Lantz		M1-4 Office Automation: Issues of the Art and Key Issues of the Future Amy Wohl Office Concepts	M2-4 Organizational Information Systems L. J. Jacobs Department of Energy	M2-5 Measuring Office Productivity Hammer & Company	T1-4 Computer Teleconferencing Hammer & Company	T2-4 Management and Professional Work The Matrix Group	T3-4 Approaches to DNS Business Systems Group	T4-4 Electronic Mail Walter Ulrich Walter Ulrich Company	
PROFESSIONAL DEVELOPMENT SEMINARS Presented at the Hilton on the Park		Full-day sessions—8:00 a.m. to 4:30 p.m.		Full-day sessions—8:00 a.m. to 4:30 p.m.		Full-day sessions—8:00 a.m. to 4:30 p.m.		Full-day sessions—8:00 a.m. to 4:30 p.m.	
Learning from Failure (M)		Helen A. Minton—University of Illinois at Chicago		Helen A. Minton—University of Illinois at Chicago		Helen A. Minton—University of Illinois at Chicago		Helen A. Minton—University of Illinois at Chicago	
Robert L. Case—Semt University		Robert L. Case—Semt University		Robert L. Case—Semt University		Robert L. Case—Semt University		Robert L. Case—Semt University	
William M. Rankin, Jr.—William Rankin Consultants		William M. Rankin, Jr.—William Rankin Consultants		William M. Rankin, Jr.—William Rankin Consultants		William M. Rankin, Jr.—William Rankin Consultants		William M. Rankin, Jr.—William Rankin Consultants	
Helen A. Minton—University of Illinois at Chicago		Helen A. Minton—University of Illinois at Chicago		Helen A. Minton—University of Illinois at Chicago		Helen A. Minton—University of Illinois at Chicago		Helen A. Minton—University of Illinois at Chicago	
Arnold M. Rosen—AISC		Arnold M. Rosen—AISC		Arnold M. Rosen—AISC		Arnold M. Rosen—AISC		Arnold M. Rosen—AISC	
Dr. Robert Givens—University of Miami		Dr. Robert Givens—University of Miami		Dr. Robert Givens—University of Miami		Dr. Robert Givens—University of Miami		Dr. Robert Givens—University of Miami	
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## It's Not Known as a Software Show, But ...

By Lois Paul  
CW Staff

ANAHEIM, Calif. — Although the National Computer Conference is not known as a software show, a large variety of software products for mainframes, minicomputers and microcomputers will be on display.

They are primarily products that are already available or recently introduced. In many cases, hands-on demos will be available so potential users can see the software in action.

United Software Systems and Services Corp. (USS) is using NCC as a vehicle for the debut of Clio, a data base management system (DBMS) for IBM and plug-compatible mainframes running under DOS, OS and VM/CMS. At Booth 7904, you can learn more about Clio, which reportedly includes a virtual space architecture designed to provide an infinite and logical view of data and permits specification of a variety of data relationships, including hierarchical, network, relational, inverted files and qualifiers.

Other DBMS that will be on display include Mathematica Products Group, Inc.'s Ramia II, which will be featured in Booth P7432. Oracle Corp. will show its Oracle DBMS for IBM VM/CMS systems and Digital Equipment Corp. and Data General Corp. minis, as well as a version for Motorola, Inc. 68000-based micros, at Booth 2232.

Cincom Systems, Inc. will exhibit its line of data base/data communications and applications products and services at Booth P7852. A highlight will be product demos of TIS, its integrated data base technology; Mantis, its on-line fourth-generation application development system; and MRPS, its manufacturing resource planning system.

Cullinet Software, Inc. will discuss its recently announced products. These include IDMS/R, a version of its IDMS DBMS that reportedly combines network and relational architectures; the Information Database, a mainframe-based information data base intended to provide access to mainframe data for IBM Personal Computer users; and the Cullinet Personal Computer System, a data-base-driven applications software system for the IBM Personal Computer.

#### Spreadsheets and Tools

At Booth W6330, SAS Institute, Inc. will display its recently announced FScale spreadsheet, a new procedure in its SAS/Full Screen Product, and SAS/Operations Research, a tool for business planning and scheduling which offers procedures for linear programming and critical path methods, among other functions. Both products run on IBM and plug-compatible mainframes.

Application software on display at

NCC will include McCormack & Dodge Corp.'s complete line of financial applications packages, including offerings for accounts payable, general ledger and human resource management systems. The firm also will be displaying Version 2.0 of its Hillite query system.

#### Micro-Mainframe Link

Management Science America, Inc. plans to display its microcomputer-mainframe interface, which is designed to enable users of its financial applications software to download data that can be analyzed on the personal computer level using products from the firm's subsidiary, Peachtree Software.

Battelle Columbus Labs will dis-

play its Basis text/numeric retrieval software at Booth S5576.

In the microcomputer arena, Holand Automation will show its Sales Order Processing module for IBM's Personal Computer and Digital Research, Inc. CP/M-based systems at Booths P7406 and P7408. Micro Data Base Systems, Inc. will be at NCC to display its MDDBS III DBMS and related products.

Reston Publishing Co., at Booth D0512, will demonstrate its Professional Applications Systems Software, a series of application development aids designed to be implemented on the IBM Personal Computer in conjunction with Lotus Development Corp.'s 1-2-3 spreadsheet, graphics and DBMS.

## Don't Expect Introductions Of New Systems at NCC

By Ed Scannell  
CW Staff

ANAHEIM, Calif. — With mainframe and minicomputer manufacturers' proximity to the two or three years for unveiling new products just before the National Computer Conference show instead of at the show itself, NCC has become the industry's biggest showroom for recently introduced rather than new products. This year's show will certainly continue that trend when it opens here next Monday.

The preannounced minicomputer expected to attract the most floor traffic is IBM's System/38 Model 8. Capable of supporting 60% more terminals than its predecessors in the System/38 family, the Model 8 holds up to 8M bytes internally and can attach as many as eight 3370 drives, allowing it to store 4.95G bytes externally.

Conspicuous by its absence, however, will be Big Blue's latest version of the Series/1. The Model 4596, which figures to play a key role in the company's networking plans as an intelligent cluster controller, is supposedly 20% faster than a similarly configured Series/1 Model 4955 Model F.

Another already announced minisummi bound to attract its share of floorwalkers is Data General Corp.'s MV/10000 system. Benchmarked at twice the speed of IBM's 4341 Group 12 mainframe and Digital Equipment Corp.'s VAX-11/780 supermini, the virtual memory system supports up to 192 terminals and is software-compatible with all DG's 32-bit and 16-bit minis.

Harris Corp. is a third minicomputer maker that will have a recently announced system on display. Intended for both general business and scientific and engineering applications, its H700 reportedly has 75% to 80% of the processing speed of DEC's VAX-11/780 but costs \$60,000 to \$75,000 less. Harris will also be demonstrating a ruggedized 300 system for military applications.

Telebit Computer Products, Inc.'s T851VM, a 32-bit virtual memory system, will be demonstrated public-

ly for the first time in Booth W6234. Built using large-scale integration microprocessor technology, the system runs under the TCP-V/ILM operating system. The operating system permits data processing functions to be conducted in five concurrent modes of operation including multiprogrammed local batch, remote batch processing, time-sharing, transaction and real-time processing. The SEL Computer Systems Division of Gould, Inc., plans to introduce a complete family of computers two days before the show. The line will range from a small desktop unit to a large mainframe.

A company spokesman said the systems will be demonstrated at the show functioning in three basic business environments — administration/financial/word processing; engineering/computer-aided design and manufacturing; and manufacturing-production/distribution.

#### NCR to Extend 8600 Line

NCR Corp. plans to introduce seven new members to its 8600 family of mainframes on Monday, the first day of the show. While the new systems will not be present at the show, a spokesman for the company said NCR will have consoles and terminals at its booth to demonstrate the systems' capabilities remotely.

The company will also be exhibiting its breadbox-size 9300 mainframe that contains the company's proprietary 32-bit chip set. The entry-level price of the system is \$24,235.

Of the remaining major mini makers, Prime Computer, Inc. continues not to attend this year's show, claiming its money could be better spent at other shows. DEC will be at NCC '83, but that vendor has not come out with a new system since last fall's VAX-11/782 introduction.

Likewise, the majority of IBM plug-compatible manufacturers either have been caught on the downside of their product cycles by this year's show — Amadahl Corp., for example — or, like IPL Systems, Inc., have decided to pass it up entirely in favor of competing shows.

## Wang word processors can now communicate with their IBM mainframe, without losing a word.

It used to be that storing documents on the mainframe was no easy task for Wang word processors. Literal translation of characters was accomplished, but document format and administrative information was lost.

Soft-Switch™ has changed all that.

Soft-Switch is a distributed software product developed by Integrated Technologies, Inc. to expand the capabilities of document routing and archiving. With Soft-Switch, Wang OIS, VS and WPS word processors can now archive documents on the mainframe—totally intact, down to the number of key strokes—and index them as you like (e.g. keyword, author, date). These documents can then be transmitted to other Wang stations, or even IBM or NBI stations, using ITI's extensive

edit level translation capabilities. This is done using Soft-Switch's store-and-forward mode—storing an IBM (or compatible) mainframe with the MVS operating system. This means that no communication is necessary between the WP operators—the recipient receives the document directly from the mainframe. And only one routing instruction is necessary, regardless of the number of destinations—within one office, across the country, or around the world.

For more information about Soft-Switch, call or write.



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## Market Action Heating Up

# Big Names in PBXs Expected to Showcase Wares

By Bruce Hoard  
CW Staff

ANAHEIM, Calif. — Stroll around the National Computer Conference floor here next week and you won't have to wait very long between communications vendors' booths, booths that will beckon attendees with ev-

erything from typewriter ribbons to digital private branch exchanges (PBX).

Right now, PBXs are the darlings of the communications world, and they are frequently lumped into the burgeoning office automation market. No matter, competition among

vendors is heating up, and all the big names should be here.

Rolm Corp.'s CBX and Northern Telecom, Inc.'s SL-1 are the big names that come to mind most quickly when the topic is PBXs.

The two companies have been slugging it out for superiority in the

still-nascent PBX market by signing various licensing and development agreements with the likes of Digital Equipment Corp., Hewlett Packard Co. and Data General Corp.

Of course, American Bell, Inc., the newly created and fully owned subsidiary of AT&T, will be at NCC with its recently introduced Dimension 85 digital PBX.

Unfortunately, the newest and hottest name on the lips of PBX aficionados — Zitel, Inc. — will be absent from NCC. Zitel and its highly touted Private Network Exchange (PNX) have chosen to forego one Anaheim show in favor of another. The PNX will have its first public demonstration at the International Communications Association conference here May 30-June 2.

## Where Does OA Begin? And End?

# NCC '83 to Cloud the Issue Even More

By Bruce Hoard  
CW Staff

ANAHEIM, Calif. — Any lingering doubts you might have about the arrival of office automation should be dispelled at the National Computer Conference.

However, figuring out just where office automation begins and where it ends could prove to be a thorny task.

If you think word processing is office automation (few people would argue to the contrary), NCC will confirm your thoughts.

If you think management workstations are office automation (of course, it's getting a little difficult to tell a management workstation from a personal computer), vendors at NCC will agree.

Local-area networks (wait a second — broadband, baseband or fiber optic?) will also be an abundant presence on the exhibit floor. Lots of vendors will call them office automation.

And so on. Chances are no matter what you call office automation, it will be under the NCC big top in one guise or another.

### 'Straight' Word Processing

So let's start with word processing. At this point, it's getting harder and harder to find straight word processing. Most vendors want you to think that for a few dollars more, you can have word processing and information processing.

Industry leaders like Wang Laboratories, Inc., Lanier Business Prod-

ucts, Inc., CPT Corp., and NBI, Inc. will all be showing their latest wares. NBI in particular will be boosting its recently introduced 4000 and 4000S systems.

Apple Computer, Inc.'s Lisa will probably be the star of the management workstation show, inheriting that distinction from another Star, the Xerox Corp. 8010, which drew huge crowds at NCC '81 in Chicago. Lisa, priced at \$10,000, uses a mouse like the 8010 and offers many of the same screen capabilities.

Grid Systems Corp. and Fortune Systems Corp. will also be touting their products, each of which could be best described as on the periphery of the management workstation scene. The Grid Compass is more a portable computer and the Fortune 32 is more a personal computer. Fortune is introducing an updated operating and word processing system.

There will certainly be no shortage of local-area networks — baseband, broadband or otherwise. Like most high-tech terms, "local-area network" is being stretched every conceivable way to match the marketing spiel of the vendors, who would have you think they have the real thing.

### 'Old Guard' to Show

The old guard — the Wangnests, Ethernets and Localnets — will also be in Anaheim next week. Xerox will be showing its new Shared Interface Unit, which connects two 800-II personal computers to Ethernet. The proliferation of local nets designed for proprietary and personal computer use will also be in evidence. AppleNet and Decision Net/Omninet from NCR Corp. are good examples.

Digital Microsystems, Inc.'s Hinet still fits the proprietary/personal computer category, but the company recently announced it has implemented those capabilities by adding multiple gateways to such mainframe manufacturers as IBM and Sperry Corp.

Infotron Systems Corp. has also joined the local net fray and will be featuring its Infotron Local-Area Network.

And oh yes, IBM. The primary purveyor of mainframe-driven office automation will be here, Charlie Chaplin clone and all, presumably.

But despite strident claims from some quarters, don't count on the computer titan to unveil a local-area network.

NCC is no longer the springboard for product debuts it once was.

### What to Expect From IBM

IBM can be expected to showcase the 3275 communications controller, its long-awaited and recently unveiled successor to the 3705 front-end processor.

On the satellite side, the trend toward this high-speed alternative to earthbound communications should be well documented by an assortment of vendors.

Of particular interest is the evolving relationship between IBM and Satellite Business Systems (SBS). SBS is jointly owned by IBM, Aetna Life & Casualty Co. and Comsat General Corp.

If a recent petition it submitted to the Federal Communications Commission is approved, SBS would no longer be restrained from selling or promoting data processing gear or services from IBM, a move that would allow the two firms to pursue any number of lucrative projects.

### AT&T's Enticements

AT&T has been moving slowly but surely toward an all-digital, nationwide network that would replace the antiquated analog version now in place.

It recently started transmitting voice and data over a fiber-optic cable link running between Boston and Washington, D.C. Expect Bell to tempt you with the wonders of fiber-optic cable.

Modem and multiplexer manufacturers will also be well represented at NCC.

Codes Corp., Rascal Milgo, Inc. and Paradyne Corp. are just a few of the many expected to be displaying their wares.

MCI Communications Corp., which is currently laying fiber-optic cable up and down the East Coast and has announced plans to buy 24 voice and data transponders on two Hughes Aircraft Co. communications satellites, will not be at NCC.

Companies that would like to be here but ended up on the waiting list include Fibronet, which recently introduced a coaxial cable/fiber-optic multiplexer, and Avanti Communications Corp., which recently introduced a time-division multiplexer said to mix voice, data and video at speeds up to 10M bit/sec.

## Using VAX/VMS, or UNIX?



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For NCC Attendees

## Companies Offering Behind-the-Scenes Tours

By Liane Lucietta  
Special to CWI

ANAHEIM, Calif. — Companies from across the U.S. will be represented at next week's National Computer Conference. Several of the "home-team" companies close to the convention center in Orange County are opening their doors to NCC attendees for behind-the-scenes tours of their facilities.

Most tours are by appointment and can be scheduled either by calling the firm directly or by visiting the company's booth at NCC.

Archive Corp. manufactures 4-in.

streaming cartridge tape drives. Stop by Booth D2215 to make tour arrangements or call Linda Credit, marketing specialist, or Loren Stone at (714) 641-0279. Archive is at 3540 Cadillac Ave., Costa Mesa. From convention center: south on Harbor Blvd., right on Sunflower. Sunflower ends and curves into Cadillac.

Bytronic Corp. makes a line of processors ranging from the top of the micro line up to supermicros. Tours are available by appointment; stop by Booth S5572 or call Norman Clark, president, or Jan Fones, administrative assistant, at (714) 871-8763. Maps to the Bytronic manufacturing plant, which is located at 1620 Orangehorpe Way, Anaheim, are

available at the booth.

California Computer Products, Inc. (Calcomp) manufactures a broad line of computer graphics, including graphics displays, plotters, digitizers and turnkey computer-aided design and manufacturing systems. Tours available by appointment; contact Marietta Schoenberger at Booth N3836 or call Laura Bonilla at (714) 821-2011. Calcomp is at 2411 W. La Palma Ave., Anaheim. From convention center: south on Santa Ana Freeway (5), exit on La Palma, left on La Palma, right on Gilbert (a side street); facility is at the end of the street on the left.

Computer Automation's Naked Mini Division is an OEM manufacturer of

products ranging from board-level microcomputers to large-scale minicomputers. Tours are available by appointment. Contact Arlene Chmielewski at Booth S5340 or call (714) 833-8830. Computer Automation is at 14651 Van Karman Ave., Irvine. From convention center: south on the San Diego Freeway (605) to Jamboere Blvd., right on Jamboere to Michelson Drive, right on Michelson to Van Karman and turn right.

Emerson Electric Co. manufactures ac inverters and uninterruptible power supplies. Tours are available by appointment. Contact Sandy E. Bell, advertising coordinator, at Booth N4067-468 or call Mary Heath at (714) 545-5581. Emerson Electric is at 3300 S. Standard St., Santa Ana. From convention center: south on the Santa Ana Freeway (5), take Newport Freeway (55) toward Newport; exit on MacArthur Blvd. and turn right; right on Main, right on Alamo, then right on Standard St., which will dead-end into parking lot.

Emulex Corp. manufactures disk and tape controllers for Digital Equipment Corp. computers. A shuttle will operate from the convention center to the plant for tours. Contact Joni Danks at Booth A3100 or call (714) 540-4346. Emulex is at 2001 E. Deere Ave., Santa Ana. From convention center: Santa Ana Freeway (5) south to the Newport Freeway (55); south on the Newport Freeway to Dyer Road; Dyer Road east to Red Hill Ave.; right on Red Hill to Deere and turn right.

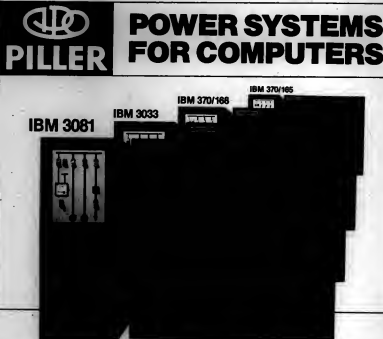
General Terminal Corp. manufactures CRT terminals. Open house and tours available by appointment. Contact Dottie Frye, administrative assistant, at Booth W6545-46 or call Kim Day, marketing secretary, at (714) 730-0123. General Terminal is at 14831 Franklin Ave., Tustin. From convention center: south on the Santa Ana Freeway (5); exit on Redhill and turn right; left on Walnut; right on Franklin.

Holland Automation U.S.A., Inc. is an international company that designs, manufactures and sells business application software for microcomputers. Open house and tours available by appointment. Contact Alan Boultage, president, at Booth P7406 or call Diana Fiet at (714) 641-2844. Holland Automation is at 3400-D MacArthur Blvd., Santa Ana. From convention center: south on Harbor Blvd. for about seven miles (pass under the Garden Grove Freeway); left on MacArthur Blvd. Facility is on the right near the railroad tracks.

Juki Industries of America, Inc. manufactures line printers, dot matrix printers and ball element typewriters. Contact Naoharu Ochai or Paul Rooney, western regional sales manager, or Dorothy Fulum, advertising manager, at Booth W6278 for tours.

Lear Siegler, Inc. manufactures CRT terminals and serial dot matrix printers. Tours available by appointment. Contact Kathy Rafferty, director of marketing, at Booth S5140 or Ron Hestrich, manager of marketing communications, at (714) 774-1010. The Lear Siegler manufacturing facility is at 901 E. Ball Road. From convention center: north on Harbor Blvd., right on Ball Road. Plant is on the left before State College Blvd.

Macrolink designs and manufactures Perkins-Elmer Corp. ads in products including communications interfaces, peripheral controllers and memory. For tours, contact Bill Goodale, vice-president, at Booth T724 or call (714) 634-8080. Macrolink is at 1150 E. Stanford Court, Anaheim. From convention center: east on Katella Ave., south on State College Blvd., right on Orangewood Ave., right on Santa Cruz. Continue to Stanford Court. Maps available at the booth.



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# Act 2

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## Firms Near NCC Offering Tours

(Continued from Preview/14)

**Micro Technology, Inc.** manufactures floppy disk and Winchester disk controllers and subsystems. Open house, tours available by contacting Mike Jacobs, vice-president of sales and marketing, at Booth D2005-7 or Tosh Hukked, office manager, at (714) 632-7580. Micro Technology is at 1620 Miraloma Ave., Placentia. From convention center: west on the Newport/Costa Mesa Freeway (55); take north on the Pomona Freeway (57); take Riverside Freeway (91); take Tustin exit north, go right on La Palma, left on Van Buren and right on Miraloma.

**Orange Micro, Inc.** specializes in personal computers which are sold through distributors, like Apple Computer, Inc. printer interface products. Its local retail store is open for visits. Contact Steve

King at Booth P7734-7738 or Don Hamby at the Orange Micro Printer Store at 3150 E. La Palma, Suite 1. From convention center: north on Pomona Freeway (57) toward Riverside, east on Riverside Freeway (91); take Kramer exit and turn left; go right on La Palma.

**Pertec Computer Corp.** manufactures a full line of single-user and multiuser business systems and software. Tours by appointment; contact Susan Litman, vice-president of marketing programs, at Booth N3848 or Janet Catavan, administrative assistant, at (714) 540-8346. Pertec is at 17112 Armstrong Ave., Irvine. From convention center: south on San Diego Freeway (405); exit on Jamboree Road and turn left; go left on McCaw, then right on Armstrong.

**Printonix, Inc.** makes dot matrix line

printers. Tours available by contacting Peter Craig, vice-president of international sales, or Don Hazelton, vice-president of domestic sales, at 8248 Wilshire or Ted Lorber, manager of product marketing, at (714) 549-7700. Printonix is at 17500 Cartwright Road, Irvine. From convention center: south on San Diego Freeway (55) to the Newport/Costa Mesa Freeway (405); exit on Jamboree and turn left; go left on Main, right on Cartwright. Facility is on a cul-de-sac.

**Randomes Data Maintenance, Inc.** markets disk pack cleaners and inspectors and offers nationwide on-site media maintenance service. For tours, contact Joseph M. Ludia II, vice-president, at Booth N4000-02 or call (213) 595-8301. Randomes is at 17500 Cartwright Road, Irvine. From convention center: north on the San Diego Freeway (405); exit in the City of Long Beach on Orange Ave. and turn left; turn right on Willow. The plant is about a half block from the corner on the left.

**Soroc Technology, Inc.** manufactures terminals and microcomputers. It will not be exhibiting at NCC, but will provide transportation for tours of its plant on 161 Freedom Ave. in Anaheim. To make arrangements, call Sherrie Priebe at (714) 992-2860.

**Systems Group** manufactures small business computers and the Business Express application development software system. The facility is open for drop-in tours or tours by appointment. Contact John Carver, president, at Booth P7107-09 or Geoffrey Willis, marketing manager, at (714) 633-4460. Systems Group is at 1601 W. Orangewood Ave. From convention center: south on Harbor Blvd., left on Orangewood; go past Anaheim Stadium and the Orange Freeway (57). Facility is about one-quarter mile past the freeway on the left side.

**Tecstor, Inc.** manufactures Winchester fixed disk drives. Tours are available by appointment; see Joe Molina, director of marketing, at Booth P8146-P8148 or call (714) 842-0077. Tecstor is located at 16161 Gothard St., Huntington Beach. From convention center: north on the Garden Grove Freeway (22) or the San Diego Freeway (405) to Beach Blvd., south on Beach to Edinger Ave., right on Edinger to Gothard St. and turn left.

**Trendata/Standard Memories Corp.** designs and manufactures a family of add-on memories for minis and micros. Group tours will be arranged and transportation provided. Contact Miles Efron at Booth P7818 or call (714) 540-3605.

**Wespacorp Western Peripherals Division** manufactures disk and tape controllers for Digital Equipment Corp., Data General Corp. and Perkin-Elmer Corp. systems. Plant tours are available. See personnel at booth P7246 or contact Bud Greenfield at (714) 730-4560, ext. 212. Western Peripherals is at 14321 Myford Road, Tustin. From convention center: south on the Santa Ana Freeway (5) to the Myford Road off-ramp, right on Myford.

**Xerox Corp. Printing Systems Division** manufactures hardware, software, accessories and supplies for electronic printing. Tutorials on the application of electronic printing in various industries will be conducted at Booth S5040 and at Disneyland Hotel. Information about tours available from Keith Davidson at booth S5040 or Paul Holtzman at (213) 615-4517.

*Lucietta is a free-lance publicist, consultant and writer who lives in North Hollywood.*

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## Aiken Focus of Pioneer Day; Hopper to Keynote

By Marguerite Zientara

**CW Staff**  
**ANAHEIM, Calif.** — The seminal machine development work of Howard Hathaway Aiken (1900-1973) and his colleagues at the Harvard Computation Laboratory 40 years ago will be the focus of this year's Pioneer Day activities at the National Computer Conference on Wednesday, May 18.

If it hadn't been for Aiken, IBM might be just another office products maker today. In the late 1930s, Aiken's search for funding for the development and manufacturing of a super calculating machine led him to IBM Chief Executive Officer Thomas

Each day of the National Computer Conference, the story of machine developments and of other facets of Howard Hathaway Aiken's work will be illustrated by a slide show given in a room just off the south lobby of the Anaheim Convention Center.

J. Watson Sr., a great believer in the potential of science and technology.

With \$500,000 donated by Watson for development work, Aiken faced another potential obstacle with the outbreak of World War II. The war

threatened to stop his calculator project before it began, but the Navy — in which Aiken was a lieutenant — realized the value of such a device for solving naval problems. Aiken was released on detachment in 1939 to complete the work.

Five years later, in 1944, the room-size Automatic Sequence Controlled Calculator — which is more familiarly known as Mark I — was unveiled. The device was the first in a series of four large-scale computing machines, the Mark I, II, III and IV. While Mark I was electromechanical, Mark IV boasted a large drum store, diode logic and magnetic core shift registers.

Opening the Pioneer Day session, "Howard Aiken and the Harvard Computation Laboratory: The Machines," will be a keynote address by another computing pioneer, Capt. Grace Murray Hopper of the U.S. Naval Reserve. Hopper was one of the first to learn how to program Aiken's Mark I computer and did applications programming for the Mark I, II and III.

The evolution of computer technology during the development and operation of the four large-scale computing machines will be discussed by Richard Bloch, president of R.M. Bloch Associates; John Harr, education consultant at Bell Laboratories, Inc.; and Peter Strong, one of Aiken's Harvard colleagues, now retired. The panel will trace the technological paths from electromechanical to magnetic and solid-state and from straight machine language coding to early attempts to permit programming directly in algebraic notation.

## Panel to Feature Colleagues Of Aiken



Robert L. Ashenhurst

By Marguerite Zientara  
CW Staff

**ANAHEIM, Calif.** — Computer Pioneer Howard Aiken, who oversaw the development of four large-scale computing machines at the Harvard Computation Laboratory in the 1940s, was above all a man of "vision and perspective," according to Robert L. Ashenhurst, professor of Applied Mathematics at the University of Chicago's Graduate School of Business.

As session leader here next week for "Howard Aiken and the Harvard Computation Laboratory: The Laboratory and Aiken's Contribution," one of the two sessions comprising the National Computer Conference's Pioneer Day on Wednesday, May 18, Ashenhurst will head a panel of Aiken's distinguished former colleagues.

Formal presentations will be made by Frederick Brooks Jr. of the University of North Carolina, who worked with IBM on the design of the 360 series, and by Kenneth Iver-

(Continued on Preview/22)

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## Film Forum to Unreel Movies Covering Spectrum of Topics

ANAHEIM, Calif. — The National Computer Conference Film Forum will unreel here Monday, May 16 at 12:30 p.m. The forum will feature continuous videotapes and movies that encompass "the whole spectrum of the user community," Harvey Marks, special activities chairman for NCC '83, said.

The films range from five minutes to one hour in length, Marks said, and touch on everything from telecommunications to pictures of Jupiter and Saturn to the

management of DP personnel.

The Film Forum Committee has reduced 30 hours of material to four or five hours of film that will be screened repeatedly. Schedules of the films will be included in registration packets.

Located in the Huntington Beach Room off the Anaheim Convention Center's North Lobby, the Film Forum will be open from 12:30 p.m. to 4:30 p.m. on Monday, from 9:30 a.m. to 4:30 p.m. on Tuesday and Wednesday and from 9:30 a.m. until 4 p.m. on Thursday.

## Wednesday Panel to Feature Former Colleagues of Aiken

(Continued from Preview/18)  
son of I.P. Sharp Associates, inventor of APL.

Iverson, Brooks and Ashenhurst will be joined for a panel discussion by Anthony Oettinger of Harvard University, Warren Semon of Syracuse University and Maurice Wilkes of Digital Equipment Corp., the only participant who was not at Aiken's laboratory.

The panel will discuss not only Aiken's contributions in designing and overseeing the assembly of computing machinery, but also his work in numerical analysis, switching the-

ory, data processing and computational linguistics.

To evaluate the importance of Aiken's contributions, "you have to look at it two ways," Ashenhurst said recently.

"First, there is actually what goes down in the record books, so to speak, and then there was the research and educational environment he promoted, which we think is a very important contribution," Ashenhurst said.

Aiken's tangible contributions lie in his "being one of the first people to get large-scale machines functioning that did useful work," according to Ashenhurst. Aiken's machines were known as Mark I, Mark II, Mark III and Mark IV.

Mark I was electromechanical and used available IBM relay components, while Mark IV had a large drum store, diode logic and magnetic core shift registers. The last two aspects being new developments at the time.

"He is, however, regarded as having had some blind spots about programming languages, which I think people would think inhibited his contributions in some important areas," Ashenhurst added. "You have to remember this was pre-1952, so programming languages were just a gleam in various people's eyes at that time."

"The Harvard machines were designed to have a separate program store and data store and that meant that although program modification was possible, the idea of having the machine itself process from one language to another was not inherent at all and was, in fact, unlikely to materialize," he explained.

### Tangible Contributions

"But many of the people who were at his laboratory at the time went on to perform quite distinguished service in programming languages and everything else, so it was largely the atmosphere he generated which we think is a very important contribution," according to Ashenhurst.

Ashenhurst said that "one thing Aiken should be given great credit for is that he saw that this was not just an engineering discipline or a mathematical discipline, but that all sorts of applications were all interrelated and that they could feed on each other in a research environment."

To illustrate his point, Ashenhurst pointed out "one thing which I think would surprise most people if they knew it — that Aiken announced in either 1954 or 1955 [in Harvard's Division of Engineering and Applied Physics] a year-long master's degree program in 'Automatic Data Processing,' the idea being that commercial applications of computers were just as important as scientific ones. To introduce such a thing in that environment, you'd have to say a man has vision — sees what's important, has perspective and also sees how to take existing frameworks and make new ground."

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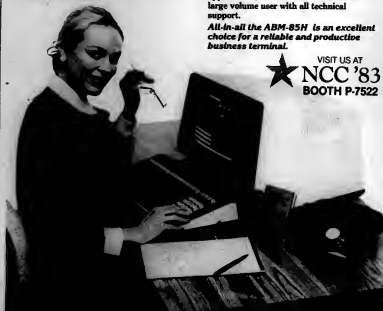
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## Facilities Made 'Barrier-Free' For Handicapped

ANAHEIM, Calif. — Increasing awareness of the need for accessible facilities for the handicapped has prompted coordinators of the National Computer Conference to provide handicapped NCC attendees with extensive services.

Carol Johnson, in charge of facilities for the handicapped at NCC, said she hopes to make this year's convention as "barrier-free" as possible.

This year's Handi-Center will be located in the Garden Grove room off the North Lobby in the Anaheim Convention Center. Johnson said this lounge area will provide people with an escort service to and from sessions, as well as simultaneous signing at sessions (advance notice is requested) and a braille edition of the conference program.

"People get around quite well for the most part," Johnson noted. "What they really want is that the environment be as barrier-free as possible."

The Handi-Center will also be staffed by medical personnel in the event that "anything untoward" happens, Johnson said.

Hotel rooms for handicapped attendees have been reserved in the Marriott Hotel, the Disneyland Hotel and the Hilton at the Park. A shuttle service will be provided from these hotels as well as from other hotels upon special request.

More information on handicapped facilities is available from Johnson at NCC Handicapped Services, 8601 Manchester Road, Silver Spring, Md. 20901.

## Tech Job Fair To Take Place May 16 and 17

ANAHEIM, Calif. — A technical career job fair will be held Monday, May 16 and Tuesday, May 17 at the Sheraton Hotel, a stone's throw away from the National Computer Conference.

Sponsored by Business People, Inc. of Minneapolis, the two-day job fair will feature representatives from 40 major companies, including Apple Computer, Inc.; Boeing Corp.; Eastman Kodak Co.; GTE Sylvania Systems Group; IBM; Intel Corp.; ITT; McDonnell Douglas Automation Co.; Raytheon Data Systems Co.; Texas Instruments, Inc.; TRW, Inc.; and Xerox Corp.

The fair will be conducted as an open house, with no registration fee or interview appointments required. Recruiters will conduct interviews and provide job seekers with information and literature on their companies.

According to a Business People spokeswoman, recruiters at the fair occasionally hire people on the spot.

More information on the fair is available from Business People, which is headquartered at 100 N. 7th St., Minneapolis, Minn. 55403.

## Afips Provides Driving Force for Conference

ANAHEIM, Calif. — Behind every conference is a sponsor. The spine of the National Computer Conference is the American Federation of Information Processing Societies, Inc. (Afips).

A federation of 11 organizations dedicated to aspects of data processing, Afips is responsible for coordinating the information exchange among those organizations and disseminating it to the public. Afips also acts as a liaison between the member societies and the government.

Afips cosponsors NCC with four other associations: the Association for Computing Machinery, the Data Processing Management Association,

the Institute of Electrical and Electronics Engineers/Computer Society and the Society for Computer Simulation.

Afips also acts as the U.S. representative of the International Federation of Information Processing (Ifip) and publishes proceedings from its conferences.

The Office Automation Conference (OAC) is another conference sponsored by Afips. A smaller version of NCC, OAC is aimed at the office-of-the-future audience.

The 11 organizations that comprise Afips are:

- American Society for Information Sciences.

- American Statistical Association.

- Association for Computational Linguistics.

- Association for Computing Machinery.

- Association for Educational Data Systems.

- Data Processing Management Association.

- Institute of Electrical and Electronics Engineers/Computer Society.

- Instrument Society of America.

- Society for Computer Simulation.

- Society for Industrial and Applied Mathematics.

- Society for Information Display.

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<b>Telex 178</b>	YES	YES	YES	35	YES	YES	YES	YES	YES	YES	YES	YES
<b>IBM 3178</b>	YES	YES	YES	2	NO	NO	NO	NO	NO	NO	NO	NO

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# NCC '83: In and Around Anaheim

## Orange County Nightlife Rivals Los Angeles

Preview/24

By Mary Andrek  
Special to CWJ

ANAHEIM, Calif. — Disneyland's wholesome, family programs has set the tone for Orange County entertainment for years. However, the latest influx of former city-dwellers into the area has brought its own brand of nightlife to rival that of Los Angeles — as visitors to the National Computer Conference here next week will find out.

Lounges in local hotels provide ample opportunity for listening to a Top '40s combo, mellow pianist or country crooner. The Territorial Saloon (Hilton at the Park), Merline (Sheraton Anaheim), Reflections

(Grand Hotel), The Chase (Hyatt Anaheim) and Top of the Park (Disneyland Hotel) have live music and dancing most evenings. Also at Disneyland Hotel is Sgt. Preston's Yukon Saloon, complete with a throaty Klondike Kate and singing Sgt. Preston.

Farther north, there's the Ginger's (Holiday Inn in Fullerton) and south, The Library Lounge (The Newporter in Newport Beach).

Elsewhere in Anaheim, many of the restaurants feature live entertainment and dancing in their bars. You might try The Baron's Lounge (upstairs in Cattleman's Wharf, 1160 W. Bell Road), Hungry Tiger (1168 S.

State College), Jolly Roger (630 W. Katella) or Mr. Stox (1105 E. Katella).

Discos are also popular, and many have changed their styles to include more than the traditional '70s beat of the Bee Gees or Donna Summer. Gambits (Anaheim Marriott) and Dance Fantasy (Cattleman's Wharf) are two popular Anaheim discos. In Costa Mesa you'll find The Blue Parrot Lounge (South Coast Plaza Hotel) and in Newport Beach The Main Brace (Newport Beach Marriott in Newport Center).

After dark you're likely to find more singing and dancing around the airport in places like The Moonraker (18542 MacArthur), Chez Dan-

te (1701 Corinthian Way), The Cabaret Lounge (Airport Inn — on MacArthur) and Alexander's Banana (Sheraton Newport at the corner of MacArthur and Birch St.).

Newport Beach is home for two jazz clubs — Studio Cafe (100 S. Main in Balboa) and Bob Burns Restaurant (37 Fashion Island). Both offer well-known and promising jazz talent in a small cabaret setting.

### New Wave, Rock 'n Roll

Goodies also features new wave bands on certain nights and rock 'n roll on others. Two Anaheim nightclubs are also part of the rock 'n roll revival — Radio City (949 S. Knott Ave.) is known for its rock and rockabilly music and Woodstock (951 S. Knott) for rock and new wave.

Other rock 'n roll clubs include Ichabod's (240 E. Chapman Ave., Fullerton), Jesseb's (125 N. State College, Anaheim), Cagney's by the Sea (406 Pacific Coast Highway, Huntington Beach) and The White House Tavern (340 S. Coast Highway, Laguna Beach).

### Foot Stompin' and Two-Steppin'

If you're interested in a little foot-stompin' or two-steppin', two local nightclubs cater to the country crowd. The Cowboy (1721 S. Manchester in Anaheim) and Crazy Horse Saloon (1580 Brookhollow in Santa Ana) have live bands performing and a host of diversions.

If you prefer to sit down and watch performers on stage, try The Golden Bear (306 Pacific Coast Highway in Huntington Beach). This is a concert nightclub that books rock, jazz, folk and classical acts. There's also The Laff Stop (2122 E. Bristol) near the airport, a stand-up comedy club that also features a racy male revue every Monday night.

The ultimate Orange County entertainment is the dinner show. It takes a number of forms, from the Polynesian show at Kono Hawaii (226 S. Harbor in Santa Ana) to clean-cut and enthusiastic young talent at three south county locations: Tibbie's Music Hall (16360 Pacific Coast Highway in Huntington Harbour), Baxter's Street (4647 MacArthur Blvd. near Orange County Airport) and The Reuben E. Lee Showboat Theater (151 E. Coast Highway in Newport Beach).

Dinner theaters are also part of this genre. There are four in Orange County that offer dinner and a well-known Broadway musical for a reasonable price. Joanne Worley is starring in "They're Playing Our Song" at the Grand Dinner Theater in the Grand Hotel in Anaheim. "My Fair Lady" is showing at The Curtain Call (690 El Camero Real, Tustin). "I Do, I Do" is at The Harlequin (3505 S. Harbor in Santa Ana) and "The Unsinkable Molly Brown" opens at Sebastian's West (140 Avenue Pico, San Clemente) on May 18.

Andrek, a free-lance writer and writing instructor at California State University in Fullerton, learned the ropes of Anaheim's thriving convention business as a publicist for Disneyland Hotel, where she worked for four years.

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## NCC '83: In and Around Anaheim

# Disneyland — Growing But Never Grown Up — Not Shy About Technology

By Richard A. Sherer

Special to CWT

ANAHEIM, Calif. — Walt Disney once made a movie about a boy who lived in Never-Never Land and vowed not to grow up. In a sense, Disney himself was that boy, and the land he created in Anaheim is dedicated to the eternal child in everyone.

In the 27 years since it opened amid the farms and citrus groves of Orange County, Disneyland has grown — from 18 major attractions in 1955 to 55 today — but it has never grown up. It is still the kingdom of Make-Believe, populated by pigs in overalls and dancing chipmunks, presided over by a mouse.

Make that The Mouse, for in the last quarter century, Mickey has become the best known rodent in the world, and his Anaheim domain has been visited by nearly 225 million guests — almost equal to the population of the U.S.

### Sophisticated Technology

A key to Disney's genius and the continuing success of Disneyland was his use of sophisticated technology to achieve a world of illusion and fantasy. Chief among these techniques is the process known as "audio-animatronics," which employs a 32-channel, 1-in. magnetic tape to control the actions of animated characters.

The tape carries audible and inaudible sound impulses as well as music and dialogue and can control up to 438 separate actions. The sound impulses activate pneumatic and hydraulic valves within the performing figures. Air and fluid tubes and devices expand and contract, creating the animated effect.

Disney technicians began experimenting with audio-animatronics in the early 1950s, using cam-and-lever mechanisms on miniature human figures. When Disneyland was built, this technique was combined with the electronic-hydraulic-pneumatic system to produce characters for attractions such as the Jungle Cruise in Adventureland — one of seven theme lands within the park — and Nature's Wonderland.

The first "pure" audio-animatronics system, which abandoned the use of cams and levers entirely, was the Enchanted Tiki Room, which opened in the summer of 1963. The Tiki Room and its surrounding Tiki Garden feature 225 animated birds, flowers and carved South Sea Thunder gods, each controlled by up to seven electrical "lifelines."

Other audio-animatronic attractions were added to the park during the '60s, including It's a Small World, the Primeval World, Tomorrowland's Mission to Mars and Big Thunder Mountain in Frontierland.

Meanwhile, Disney technicians continued to refine the techniques for the Pirates of the Caribbean, the Haunted Mansion, Country Bear Jambooree and America Sings. In

these attractions, each scene is an individual, complete and continuous performance. The separate sound, light and figure controls of each scene are isolated from the preceding and following scenes through the use of independent program elements.

While these attractions continue to entertain visitors to the park, technicians are developing still more uses of audio-animatronics. The lip (Continued on Page 26)

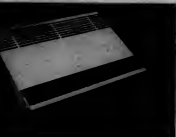


A pirate chieftain attempts to auction a young maiden in a scene from "Pirates of the Caribbean." More than 100 audio-animatronics figures highlight this 15-minute adventure.

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Big Thunder Mountain is a landmark in Frontierland.

## Disneyland — Growing But Never Grown Up

(Continued from Preview/25)  
movements of characters now can be programmed to match the pronunciation of words on the tapes, heightening the illusion of realism. And at the opening of Disney's Epcot Center in Florida last year, the first walking audio-animatronics figure was introduced.

### Seven Theme Areas

For the typical visitor who zips through Disneyland on the monorail, however, the secrets behind these technical marvels mean little. There is still the wonder of fantasy,

the inevitable urge to grin when confronted by larger-than-life cartoon characters shaking hands with solemn three-year-olds, the happy terror of hurdling through black space in Space Mountain and the contentment that comes from a leisurely cruise on the stern-wheeler Mark Twain.

All this happiness is contained in a scant 76.6 acres; even the parking lot (107.3 acres) is larger. Within that small space, 13 million guests are annually accommodated in seven theme areas:

- **Main Street** — a composite of idealized small-town America at the turn of the century, with silent movies, gift shops, horse-drawn streetcars and quaint gift shops staffed by quaintly costumed sales clerks.

- **Adventureland** — a visit to the exotic regions of Asia, Africa and the South Pacific and home of the Enchanted Tiki Room.

- **Bear Country** — a re-creation of the American Northwest wilderness and home of the Bear Country Jam-boree.

- **Frontierland** — a return to the world of pioneers and the heritage of the Old West.

- **New Orleans Square** — quaint antebellum shops and the Pirates of the Caribbean.

- **Tomorrowland** — the world of the future, which sometimes is pressed by the technology of the present.

- **Fantasyland** — perhaps the best-known of all Disneyland realms — has been undergoing extensive renovation for the last 19 months and is scheduled to open again later this summer. However, the popular Small World attraction still is accessible, unaffected by the changes that will see each of the traditional Fantasyland rides expanded and remodeled and the addition of a new adventure featuring Pinocchio, the puppet who sought to become a real boy.

Interspersed within these frameworks is live entertainment, including headline entertainers in various locations around the park.

Of course, dining is not forgotten, either. Each land has an eating establishment in keeping with its theme, from the formal elegance of New Orleans Square and the exotic South Sea dinner show in Adventureland to the perhaps symbolic fast food stands of Tomorrowland.

In spite of the availability of alternatives, Disneyland reports that its guests consume 4.5 million hamburgers and two million hot dogs a year, accompanied by enough soft drinks to fill a five-acre lake.

Perhaps the least-noted characteristic of the park is its constant cleanliness. Streets and walkways are steam-cleaned every night after closing, and unobtrusive janitorial employees circulate among the tourists, collecting up to 30 tons of trash a day.

Sherr, a veteran journalist and public relations consultant, now works as a freelance writer. His specialties include science, health care and business writing.

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# Oldest U.S. Theme Park Started as Berry Farm

(Continued from Preview 27) tractions range from the Good Time Theatre, which features headline entertainers and an ice show starring Charlie Brown's famous dog, Snoopy, to the storybook Knott's Bear-y Tales Ride, a gentle odyssey through a gypsy camp and country fair on the trail of a pie-stealing coyote.

In between, Knott's maintains a careful blending of old and new. The Bottle House in Ghost Town, assembled from hundreds of bits of broken bottles embedded in adobe, features a priceless collection of antique music machines in perfect working order, while the Bear-y Tales Ride rends its way above an arcade that

resounds with the beeps and whistles of the latest electronic games. And while The Good Time Theatre played host recently to the 18th annual Academy of Country Music Awards presentation, visitors still hissed at the villain in an old-fashioned melodrama at the Birdcage Theater.

Although there is no

shortage of rides and attractions at Knott's, some of the action takes place outside the park's gates. A shopping arcade lines the path leading to the ticket booths, and three family restaurants — Mrs. Knott's famous chicken house, a steak house and a garden buffet — attract drop-in diners.

Across the street from the

park proper, a tree-lined walk leads past Henry's Auto Livery, where youngsters may drive replicas of classic cars, to a miniature lagoon surrounded by a scaled-down railroad and a carousel. A burro ride gives visitors a sense of the Old West, while pedal boats circle a tropical-looking island and the "Cordeia K" riverboat.

Independence Hall, modeled after the birthplace of the nation, recalls the country's heritage in the midst of well-tended lawns and benches.

## Candy Kitchen

No trip to Knott's is complete without a visit to the candy kitchen, where giant paddles engage in a day-long taffy pull in front of an accommodatingly large window. The adjacent candy store also features Knott's extensive selection of preserves, including one made from Mr. Boyesen's berry, which brought Walter Knott his initial fame.

The original berry farm was well-established in 1932, when the U.S. Department of Agriculture asked Knott's help in tracking down Rudolph Boyesen, an Orange County farmer who had developed a hybrid strain of berry that reportedly was larger, juicier and had a better flavor than the young berries that were the area's staple.

Like other Southern California attractions, Knott's Berry Farm continues to grow. Later this summer, the park will open Camp Snoopy, an area with a High Sierra theme and featuring a petting zoo, steam boats, a Ferris wheel and a computer learning center. With the addition of Camp Snoopy, Knott's will be offering a total of 165 rides, shows and attractions.

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# Zilog



The world's first upside-down roller coaster, Knott's Berry Farm's Corkscrew features two 360° loops through which passengers are carried at speeds up to 45 miles per hour.

# Anaheim Museums — Small, Special, Private

By Mary Andrek  
Special to CW

**ANAHEIM, Calif.** — For the museum-goer, Orange County offers several small museums, unusual special collections and many private galleries, but you'll have to travel out of the county to find larger institutions on the scale of major metropolitan museums.

## Orange County Museums

**Bowers Museum, 2002 N. Main St., Santa Ana, (714) 547-8304.** "Treasure of the Quicksilver Galleries," a traveling exhibit from the Smithsonian Institution, is on display during NCC '83. The exhibit includes more than 200 artifacts from two Spanish ships that sank off the coast

of what is now the Dominican Republic in 1724 while en route from Spain to Mexico. There's also a permanent collection of African art, Indian handwork and local historical artifacts. Hours: Tuesday-Saturday, 10 a.m. to 5 p.m.; Sunday, noon to 5 p.m.

**Briggs Cunningham Automotive Museum, 250 E. Baker St., Costa Mesa, (714) 546-7616.** This is home for one of the world's largest collections of rare and antique cars and one-of-a-kind sports and racing cars. Highlights are a Bugate Royale valued at \$3 million, a Duesenberg "J" and an "SSJ" Duesenberg. Hours: Wednesday-Sunday, 9 a.m. to 5 p.m.

**Laguna Beach Museum of Art, 307 Cliff Drive, Laguna Beach, (714) 494-4531.** On display during NCC '83 is "Orange County Clay," an exhibit featuring works in the medium by 20 artists who

live or work in the area. It includes murals, tiles, pottery and utensils as well as many humorous pieces. The museum also houses a permanent collection of 19th and 20th century California art. Hours: Tuesday-Sunday, 11:30 a.m. to 4:30 p.m.

**Marieland of the Air, 1971 Airport Way S., Santa Ana, (714) 543-1193.** A collection of antique aircraft and replicas from the early days of flight. The 36 move veterans on display include the replica of a 1910 Curtiss Pusher used in "The Great Race" and a Stinson L-1 shown in "The Great Waldo Pepper." Hours: Tuesday-Sunday, 10 a.m. to 5 p.m.

**Newport Harbor Art Museum, 850 San Clemente Drive, Newport Beach, (714) 759-1122.** During NCC the museum will show "Loam MacIver: Five Decades," a collection of 43 paintings that

span the last 50 years, and drawings and porcelain by contemporary artist Ivor Tepper. Hours: Tuesday-Sunday, 11 a.m. to 5 p.m.; Friday, 11 a.m. to 9 p.m.

## Out-of-Town Museums

**Los Angeles County Museum of Art, 5905 Wilshire Blvd., Los Angeles, (213) 857-4222.** Current exhibits include "An Elegant Art: Fashion and Fantasy in the 18th Century," the museum's collection of more than 300 18th century costumes, textiles and accessories; "The Works of Edward Ruscha, Part II," a major retrospective of works from 1973 to the present by the renowned Los Angeles artist; and "Male and Female: The Couple in African Sculpture." Permanent exhibits include American, British and European art and ancient art from West Asia and Egypt. Hours: Tuesday-Friday, 10 a.m. to 5 p.m.; Saturday and Sunday, 10 a.m. to 6 p.m.

**Los Angeles County Museum of Natural History, 900 Exposition Blvd., Los Angeles, (213) 744-3414.** On display this month are "The Wildlands and Wildlife of California," a photographic exhibit; "Go for Broke," dedicated to the efforts of Japanese-American soldiers in WWII; and "Gregorian Calendar," marking the 400th anniversary of the current calendar systems; "California Faces From the Past"; "Hawaii's Unique and Vanishing Flora"; and "Mushrooms Up and Down Los Angeles." Hours: Tuesday-Sunday, 10 a.m. to 5 p.m.

**California State Museum of Science and Industry, 700 State Drive, Exposition Park, Los Angeles, (213) 774-6400.** Industrial Aesthetics, "photos of the art of industrial design, is on display through June. Permanent exhibits include "Mathematics: The World of Numbers and Beyond," designed by Charles Eames and sponsored by IBM, "The Turning Wheel," a display of the mechanical sciences and the evolution of the motor car, and displays on electricity, communications and water. All require visitor interaction. Hours: Daily, 10 a.m. to 5 p.m.

**J. Paul Getty Museum, 17965 Pacific Coast Highway, Malibu, (213) 459-8402.** The museum building is a re-creation of an ancient Roman villa, and the gardens contain the same types of flora that might have grown there 2,000 years ago. Collections include antiquities, paintings and decorative arts. The Berene Collection of Greek vases is on display indefinitely. Hours: Tuesday-Sunday, 10 a.m. to 5 p.m. You'll need parking reservations, available by calling in advance.

**Huntington Library, Art Gallery and Botanical Gardens, 1151 Oxford Road, San Marino, (213) 792-6141.** The library contains more than 600,000 books, including a Gutenberg Bible, and millions of manuscripts, among which are Chaucer's *Canterbury Tales* and Thoreau's *Walden*. The art gallery houses British 18th and 19th century art, including Gainsborough's "Blue Boy." On display in May is a selection of English landscape prints. The gardens contain plants and trees from across the globe arranged in 12 botanical displays. On the 207-acre grounds you'll find a rose garden with 1000 varieties and a desert garden with the world's largest collection of desert palms. Hours: Tuesday-Sunday, 1 p.m. to 4:30 p.m. Reservations are required for Sunday visits. (213) 465-3903.

**Reuben H. Fleet Space Theater and Science Center, Balboa Park, San Diego, (619) 238-1233.** The theater programs feature 70mm film projected through a fisheye lens onto a 76-ft tilted dome to produce a feeling of actually being in space. "Tomorrow in Space" is a 30-minute film depicting life in space in the 21st century. "Voices from the Sky" is a multimedia show covering the last 25 years in satellite technology. The Science Center uses visitor participation to illustrate the principles of science. Hours: Monday-Friday, 9:45 a.m. to 7 p.m.; Saturday, 9:45 a.m. to 10:30 p.m.; Sunday, 9:45 a.m. to 8:30 p.m.

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# What's Bigger Than a 747 and Flew One Time?

By Richard A. Sherer

Special to CWT

LONG BEACH, Calif. — Its critics called it "The Flying Lumberyard." A U.S. Senate committee suggested that it represented fraud and mismanagement of government funds. It will become Southern California's newest tourist attraction when it opens next week in Long Beach — a manageable ride from Anaheim — next to the famed ocean liner RMS Queen Mary.

The "if" in this case is Howard Hughes' legendary wooden seaplane, the *Spruce Goose*. Larger than a 747, with a wingspan 19 feet longer than a football field, the mammoth

eight-engine aircraft will be officially opened to the public May 14 — nearly 36 years after its only flight across Long Beach Harbor.

Surrounded by an indoor lagoon, the *Spruce Goose* exhibit is housed inside the world's largest aluminum dome and is the centerpiece of an aviation history museum that also includes a full-scale model of Hughes' record-setting H-1 Racer.

Visitors can view the cockpit, flight deck and cargo hold through plexiglass windows mounted along the fuselage. A working cutaway of a Pratt and Whitney R-3600 engine, the largest radial reciprocating engine ever built, also is on display.

Eight of these mechanical giants lifted the 400,000-pound *Spruce Goose* 70 feet above the water in its Nov. 2, 1947 flight with Howard Hughes himself at the controls.

When the U.S. became involved in World War II, Hughes and industrialist Henry Kaiser conceived of a giant wooden cargo plane that would ferry men and material across enemy-controlled oceans. Wood was selected as the building material because German submarines had created a shortage of strategic metals.

The federal government appropriated \$18 million for the building of three aircraft. Hughes eventually contributed another \$7 million of his

own company's funds when Kaiser dropped out of the project.

The plane's design presented unprecedented challenges. In an era before integrated circuits and on-board microprocessors, Hughes developed mechanical and hydraulic systems to enable the flight crew — or the pilot alone, if necessary — to operate an aircraft many times larger than anything previously conceived by aviators or aircraft builders.

Unfortunately for Hughes, the war ended before the plane was completed. The government was no longer interested in funding the prototype, and a Republican Congress was seeking ammunition in a campaign to discredit the Democrats' conduct of the war. An over-budget cargo plane that had cost \$18 million and never flown was a tempting target, and Hughes was grilled by a Senate committee.

During a recess in the hearings, Hughes returned to California and invited reporters aboard *Hercules* for a cruise across Long Beach Harbor. Then, after dropping off the newsmen, he gunned the engines and took off on an unscheduled and unexpected demonstration flight. By the time the wooden aircraft returned to the surface of the water a mile away, Hughes had ensured that public opinion was on his side in his battle with the senators.

A few weeks later, he produced evidence that the chairman of the investigating committee had accepted free passes from an airline that was competing with Hughes for the U.S. contract for transatlantic mail service, and the inquiry was dropped.

But Hughes' victory in Washington spelled the end of the line for the *Hercules*. The industrialist turned his attention to other interests and, as a target of lawsuits gnawed away at the fringes of his empire, became a recluse.

The plane was locked in a guarded hangar in Long Beach Harbor. Hughes' employees maintained the plane in perfect working condition against the day the billionaire aviator would again want to try its wings. That day never came.

The end of the *Spruce Goose's* exile — and very nearly the end of the plane itself — came in 1980 when the lease on the hangar expired and could not be renewed. Summa Corp., the holding company created by Hughes before his death, announced plans to cut the plane into sections and donate the pieces to aerospace museums around the country.

News of this plan generated a storm of protest. Historians, aviation buffs, broadcasters and civic leaders joined a campaign to save the plane, finally persuading Summa to leave the *Hercules* intact if a home could be found.

The Aero Club of Southern California, an organization of flight historians, was given title to the plane. Weather Corp., which had just assumed management of the Queen Mary hotel and surrounding complex, agreed to provide a resting place for the *Spruce Goose* and to operate it as an exhibit on behalf of the Aero Club.

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## NCC '83: In and Around Anaheim

# L.A.'s the Place for a Myriad of Recreational,

By Richard A. Sheer  
Special to CW

LOS ANGELES — "L.A.'s the Place!" is the slogan of California's largest city, but "L.A.'s the Place!" better describes the true character of Los Angeles. The city itself — easily visitable by those attending the National Computer Conference in Anaheim — stretches from the harbor at San Pedro north across the Santa Monica Mountains and the San Fernando Valley to the foothills of the San Gabriel range, 50 air miles away. Los Angeles encompasses 465 square miles, roughly the combined

areas of St. Louis, Cleveland, Milwaukee, Boston, Pittsburgh, Manhattan and San Francisco. It includes such seemingly autonomous communities as Hollywood, Encino, Van Nuys, North Hollywood and Canoga Park, among others.

Fewer than half the seven-million-plus Angelenos live in the city. Los Angeles County covers nearly 10 times the city's area, with a population of almost four million more than the city of L.A.

In addition to the city of Los Angeles, the county consists of 90 independent cities, some known in their

own right — Beverly Hills, Long Beach, Pasadena and (Beautiful Downtown) Burbank. It is little wonder that writer Robert Benchley called Los Angeles "14 suburbs in search of a city."

### Attractions

For a visitor with a limited amount of time, Los Angeles presents a bewildering array of cultural and recreational choices. The list that follows is not intended to be a complete catalog of what to see and do; it is only a sampling of the variety offered by the city.

Catalina Island. Twenty-six miles off the coast, this scenic island resort offers family recreation and entertainment ranging from glass-bottom boat cruises and diving fish boat trips to hiking, swimming and cycling. Daily cruises to the island depart from Long Beach, Newport Beach and San Pedro.

Chinatown. Located in the 900 block of N. Broadway, a few minutes from the Los Angeles Civic Center, Chinatown features shops and restaurants recalling Old China and the Far East. Admission charge, self-guided walking tour; included in many bus tours.

Little Tokyo. First and San Pedro Streets, near the Los Angeles Civic Center. Little Tokyo serves as the social, economic, cultural and religious center of the largest Japanese-American community in the mainland U.S. Validated parking is available for the parking structure at 111 S. Central Ave. Self-guided walking tours.

El Pueblo de Los Angeles, 845 N. Alameda St. near the Los Angeles Civic Center. This state historical park includes the famed Olvera St., birthplace of Los Angeles. Shopping, dining, restored historic buildings and monuments. Guided tours (213) 628-1274.

Griffith Park. Coming from Anaheim, take the Los Feliz Blvd. off-ramp on the Golden State Freeway (5). Sprawling across 4,063 acres in the Hollywood Hills, Griffith Park offers hiking, tennis, golf, horseback riding and a history of transportation exhibit. The Griffith Observatory and Planetarium, located on the side of Mt. Hollywood in the park, is open to the public daily. There is a \$1 fee for entering the park.

Los Angeles Zoo. Adjacent to Griffith Park, at the junction of the Golden State (5) and Ventura (134) Freeways, are 113 acres with a children's zoo, reptile house, aviary, kiosk house and aquatic section. Hour: 10 a.m. to 5 p.m. Admission: adults, \$3; children (5-15) and senior citizens, \$1. Guided tours. Information: (213) 666-4090.

Marineland, located on the Palos Verdes Peninsula. Take the San Diego Freeway (405) north to Western Ave.; Western Ave. south to Palos Verdes Drive S.; at Palos Verdes Drive S., turn right (west). Aquatic shows feature killer whales, performing dolphins and sea lions. Sea Reef offers visitors an opportunity to swim in an aquarium with 4,000 species of fish. Swimming gear rental is \$3.50. Hours, 10 a.m. to 5 p.m.; Wednesday to Sunday. Admission: adults, \$6.50; children, \$6.50; seniors, \$7.65. Information: (213) 541-5663.

### Performing Arts

Universal Studio Tour. Take the Lankershim Blvd. off-ramp of the Hollywood Freeway (101). Tram tour behind the scenes of Hollywood's largest movie studios. Live shows, museums, exhibits. Open 8 a.m. to 6 p.m. Adults, \$10.50; children 3-11, \$7.75. Information: (213) 877-1311.

Burbank Studios. Olive at Hollywood Way, Burbank. Take the Hollywood Freeway (101) north to Burbank Blvd.; Burbank north to Olive; studio is on right. This is the home of Warner Bros. and Paramount Pictures, as well as many independent production companies. It offers a VIP Tour for groups of no more than 12 people so that they may observe and film-making. Tours Monday through Friday, 10 a.m. and 2 p.m.; no children under 18. Price, \$16 per person; lunch is available at extra cost if reserved; advance reservations are made. Contact Manager of VIP tours, (213) 954-1744 or 954-1008.

ECET Studio Tour. 4401 Sunset Blvd., Hollywood. Take the Sunset Blvd. off-ramp from the Hollywood Freeway (101); go east on Sunset approximately 2.5 miles. Guided tours of the former MGM-Grand Studios, now occupied by Los An-

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**ABC Entertainment Center, Century City.** Take the Santa Ana Freeway (5) to the Santa Monica Freeway (10); go west on the Santa Monica Freeway to Robertson Blvd.; Robertson Blvd. north to Olympic Blvd.; Olympic Blvd. west to Ave. of the Stars and turn right, the center is opposite the Century Plaza Hotel. The complex includes the Shubert Theatre (see below), Plitt (movie) Theatres, Playboy Club, the Hollywood Experience tour and a number of restaurants and shops. Information: (213) 557-4491; Hollywood Experience: (213) 553-0626.

**NBC Studios, 3000 Alameda Ave., Burbank.** Take the Buena Vista off-ramp from the Ventura Freeway (134). Tour daily, 10 a.m. to 5 p.m. Adults, \$3; children 5-11, \$2. Information: (213) 840-3572.

**Hollywood Bowl, Highland Ave. at the Hollywood Freeway (101).** Famed natural amphitheater in the foothills, offers evening concerts throughout the summer. Grounds open daily 9 a.m. to 5 p.m. Information: (213) 876-8742.

**Mann's Chinese Theatre, 6925 Hollywood Blvd.** Take the Highland Ave. off-ramp from the Hollywood Freeway (101); go right on Hollywood Blvd. Hand- and footprints of many stars are preserved in concrete in the forecourt of this famed Hollywood landmark. Made first-run movies premiere here. Information: (213) 464-8111.

**Music Center, Grand Ave. at Temple St.** Take the Grand Ave. off-ramp at the junction of the Hollywood (101) and Santa Ana (5) Freeways. At this three-theatre complex near the Los Angeles Civic Center, "Zorba" starring Anthony Quinn is playing at the Dorothy Chandler Pavilion; "Crimes of the Heart" with the original Broadway cast is at the Ahmanson Theatre. Three restaurants. Free guided tour of the Pavilion Ahmanson, and Mark Taper Forum. Tour reservations: (213) 972-7483.

**Pantages Theatre, 6233 Hollywood Blvd.** Take the Hollywood Blvd. off-ramp from the Hollywood Freeway (101); go west on Hollywood Blvd. One of the nation's foremost examples of Art Deco Renaissance architecture. Currently featuring "Woman of the Year" starring Lauren Bacall. Information: (213) 469-7161.

**Shubert Theatre, ABC Entertainment Center, Century City.** Take the Santa Ana Freeway (5) to Santa Monica Freeway (10); go west to Robertson Blvd.; north to Olympic Blvd.; west to Ave. of the Stars. Currently featuring "Dreamgirls" starring Jennifer Holliday. Information: (213) 553-8101.

## Shopping

**Arco Plaza, Flower St. between 5th and 6th St.** Take the Santa Ana Freeway (5) north to Santa Monica Freeway (10); west to Harbor Freeway (110); north to 6th St. off-ramp. Three levels of underground shops and restaurants.

**Beverly Hills.** Take the Santa Ana Freeway (5) north to Santa Monica Freeway (10); west to La Cienega Blvd.; north on La Cienega Blvd. to Wilshire Blvd.; west on Wilshire Blvd. Major shopping areas include new Beverly Center complex at Wilshire and La Cienega, famed downtown Beverly Hills area including Rodeo Drive bounded by Wilshire and Santa Monica Blvd. west of Beverly Drive.

**Broadway Plaza, two blocks south of Arco Plaza at 7th and Flower Streets** (see directions above). Shops and restaurants in enclosed complex adjacent to Hyatt Regency Hotel.

**Farmer's Market, 6333 W. Third St.** Take the Santa Monica Freeway (10) west to La Cienega Blvd.; north to Fairfax Ave.; Fairfax to Third St. Unique marketplace featuring 160 shops and stores. Fresh produce, souvenirs.

**Marina Del Rey.** Take the San Diego Freeway (405) north to Marina Freeway (90); west to Lincoln Blvd. Seaside residential, commercial and shopping complex. Fisherman's Village, major restaurants.

**Marina Pacifica.** Take the San Diego Freeway (405) to Westminster Ave.; west to Pacific Coast Highway (1). Fashion mall with shops, restaurants.

**Porto O'Call Village.** Take the San Diego Freeway (405) north to Canon St.; west to Harbor Freeway (110); ramp from San Diego Freeway to Harbor Freeway southbound is closed for construction; south on Harbor Freeway to Gaffey St.; south to 6th St.; east to Village entrance. Seventy-five shops, 10 restaurants, view of harbor entrance, boat rides and harbor cruises.



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# All of California's Wineries Not in the North

By Liane Lucietta  
Special to CWI

ANAHEIM, Calif. — Northern California no longer has exclusive hold on the production of fine California wines. Just a little over one hour's drive from the site of the National Computer Conference, the Temecula area has weather conditions almost identical to those of the Napa Valley. Although the oldest winery is only nine years old, the wines produced here have placed well in almost every category of wine judging.

Seven wineries are open for tours and tasting in the Temecula area. Most are small, family-run operations. All are located fairly close to

one another. When you're in the area next week, drop in and visit:

- **Hart Winery**, four miles east of I-15 off Rancho California Road. Access is from a dirt road you follow up the hill to a barn. Available for purchase: Sauvignon Blanc, Chenin Blanc, Petite Sirah, Cabernet Sauvignon. Hours: 11 a.m. to 4 p.m. Saturday and Sunday, by appointment on weekdays. Information: (714) 676-6300.

- **Joe Hart came from a family of teetotalers but was introduced to wine while in the army during the mid-'50s. He worked as a scientist at Scripps Institute of Oceanography and for 13 years as a teacher in Carlsbad before purchasing land in Temecula in 1973. Hart planned the vineyards in 1974 and opened the winery in 1980.**

- **Callaway Vineyard and Winery**,

32720 Rancho California Road, the first driveway past Hart Winery. For purchase two different Chardonnays (one a French oak reserve), Cabernet Sauvignon, Petite Sirah, Zinfandel, Chenin Blanc, Sauvignon Blanc, Fume Blanc, a dry White Riesling, a selection of desert wines. Hours: 10 a.m. to 5 p.m. daily. Guided tours are free and begin on the hour until 4 p.m. There is a \$1 per person charge for the tasting and sit-down lecture. Information: Beverly Ashbrook, director of the visitor center, (714) 676-4001.

Ely Callaway is the driving force behind the winery, building its reputation without advertising through heavy publicity and marketing. Callaway started the operation in 1973 while president of Burlington Industries. Miram Winery Corp. purchased the operation in August

1981. Callaway is still chairman of the board.

Callaway employs the latest equipment and techniques and is the best known, most commercial and elaborate operation in the area. Few or no chemicals are used in the vineyard.

- **Picotti Winery**, 35410 Rancho California Road, about a half-mile east of Callaway. Since Picotti Winery opened last July, its own wines have not been ready until 1986. However, local wines are available for purchase. Hours: 10 a.m. to 5 p.m. Friday through Sunday, by appointment Monday through Thursday. Information: (619) 728-5774 or (714) 676-5400.

- **Dr. John Picotti**, a urologist, located in Fallbrook nine years ago, he decided to at home in his spare time. Picotti became friends with Vince Cilurzo (of Cilurzo Winery), and they decided to start a winery together. The partnership was dissolved in 1980, but they remain friends.

- **Mount Palomar Winery**, 33820 Rancho California Road, a large redwood oak marks the entrance. Available for purchase: Chubis, Vin Rose, Burgundy, Sangria, Marsala, Chardonnays, Sauvignon Blanc, Chateau Palomar Sauvignon Blanc, White Riesling, White Zinfandel, Vintage White, Chenin Blanc, Vintage Rhine, Zinfandel, Shiraz, Cabernet Sauvignon, Petite Sirah, sherries, extra dry Champagne, brandy. (The Champagne and brandy are made elsewhere.) Hours: 9 a.m. to 5 p.m. daily. Tours start at 1:30 and 3:30 p.m. daily with an additional tour at 11:30 a.m. weekends. Information: (714) 676-5047.

The dome of Palomar Observatory is visible from the vineyards on a clear day, hence the name. Mount Palomar owner John Poole was originally in broadcasting and founded what eventually became KBCB-FM Radio in Los Angeles.

Poole planted Mount Palomar's vineyards in 1969. In 1975 the winery was built and the operation became commercial.

- **Cilurzo Vineyard and Winery**, 41120 Calle Conterado at the corner of Rancho California Road. Look for the dirt road entrance on the south side of Rancho California Road. For purchase: Chardonnay, Chenin Blanc, Fume Blanc, Gamay Beaujolais, Cabernet Sauvignon, Petite Sirah. Hours: 9 a.m. to 5 p.m. Saturday and Sunday, by appointment weekdays. Information: (714) 676-5250.

The Cilurzo family moved to Temecula in 1967.

Cilurzo Winery is a small, family-owned operation. Informal tours are usually conducted by Audrey or Vince Cilurzo.

- **Mesa Verde Winery**, 34565 Rancho California Road. The mission-style building on a hilltop can be seen from a distance. Available for purchase: Johannesberg Riesling, a white table wine which is a blend of Johannesberg Riesling, a rose, a Petite Sirah and wines from near-by Hugo's Cellars as well as from 120 different California wineries. Hours: 9 a.m. to 5 p.m. daily for the wine shop and tasting room. Tours are by appointment only but, due to construction, there is not much to tour at present. Information: (714) 676-3250.

Mesa Verde owners Keith and Lynne Karum founded the winery in 1980. Lynne, a book agricultural writer at the University of California, Davis, Keith has a B.A. in viticulture.

- **Filsinger Vineyards and Winery**, 30082 De Portola Road, At Glen Oaks Road go south to De Portola Road, then right until you get to Filsinger. Available for purchase: Fume Blanc, Chardonnay, Petite Sirah, Zinfandel, Gamay Beaujolais, a dry, low-alcohol Emerald Riesling and a late-harvest Johannesberg Riesling. Hours: 10:30 a.m. to 5 p.m. Saturday and Sunday, by appointment weekdays. Information: (714) 676-4594.

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## Along the Camino Real

## California's Missions Offer Cleansing Retreat

By Mary Andrek

Special to CWI

ANAHEIM, Calif. — After a series of seminars at the National Computer Conference, you may be ready for a cleansing retreat to one of the nearby missions.

Between 1769 and 1823, Franciscan fathers Junipero Serra and Fermín Lasuen founded 21 mission settlements that stretch along the California coast for 600 miles from San Diego to Sonoma. Each was about a day's journey apart, providing a convenient land link between Mexico and the northern seaports. They were spread along the route that came to be called "El Camino Real" — the King's Highway. Today U.S. Rt. 1 closely follows this historic trail.

The early religious settlements, along with the military "presidios" and the civilian "pueblos," or towns, were the foundation of Spanish civilization in the state. The missions grew and prospered for 70 years, with the resident priests and Indians establishing a trade in hide, tallow, wine, ranching and farming.

In the greater Los Angeles and Orange County area, four missions were established. The most famous of these is located about a 45-minute drive south of Anaheim along I-5 in San Juan Capistrano.

The mission, known for its legendary swallows who arrive on schedule every March 19 and leave every Oct. 23, has the distinction of having been founded twice. The first time was in 1775, when Father Lasuen erected a cross at the site. Eight days later, the priest got word of an Indian attack on the mission in San Diego and he and his party left the settlement to help defend the one farther south.

A year later, Father Serra led the second founding party back to San Juan Capistrano. The cross was still standing.

The first adobe church on the site was dedicated in 1776, and the mission continued to grow. By 1797 construction was under way on a larger church, an ambitious and elaborate project under the direction of Isidor Aguilar, an expert Mexican stonemason.

The great church, under construction for nine years, was destroyed in minutes in the earthquake of 1812. The people returned to worshipping in the little adobe church.

Mexico won independence from Spain in 1822, and California came briefly under its control. In 1833, the mission lands were turned over to the Indians who had inhabited them, but owners of California's vast ranchos soon became the official owners of all mission territory. Settlements were subdivided and sold, and the missions fell into ruin.

In 1862, Abraham Lincoln returned the missions to the Catholic church in the new state of California, but restoration and preservation did not begin in earnest until the 20th century. In 1922 Father John O'Sullivan, Capistrano's parish priest, rediscovered the adobe church, which

had been used as a granary and storehouse for years.

Construction is now under way on a new church, a building with seven domes and a bell tower in the likeness of the great stone church that once stood on the grounds. It is scheduled to open in 1984.

A tour of the Mission San Juan Capistrano includes the ruins of the stone church and the Campanario, or bell wall; the colorful adobe chapel where Mass is said daily; the ruins of the once thriving mission industry in soap and hide; a cemetery; and lovely pools and gardens. The mis-

sion is open daily from 7 a.m. to 5 p.m.

The Mission San Gabriel Arcángel, the fourth to be established in the mission chain, is located in the city of San Gabriel off I-5 at the New Ave. exit. It was founded in 1771 near what is now Montebello to help close the long gap between the first mission in San Diego and the second, some 500 miles farther north in Monterey. It was moved five years later to its present location, where construction began in 1796.

Today it houses a fine collection of mission artifacts, including a series

of Indian paintings thought to be the earliest examples of native Christian art. The church is still in use and is in excellent condition. It contains a copper baptismal font brought from Spain in 1771; the massive bells in its exterior Campanario are more than 200 years old. The mission is open from 9:30 a.m. to 4:30 p.m.

Following the mission trail north from San Gabriel, you'll find the Mission San Fernando Rey de España in Mission Hills, midway between I-5 and I-405. Founded in 1797, this 17th mission in the chain

(Continued on Preview/40)



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CW 0508

# There's Nothing Like a California Beach

By Liane Lucietta

Special to CW

**ANAHEIM, Calif.** — The beaches close to Anaheim are known for good surfing, good swimming, high cliffs and sandy coves. A variety of activities such as boating, fishing and diving can be enjoyed nearby.

Repairs are under way on beachfront homes and piers that were damaged by storms earlier this year. However, swimmers and surfers should be aware that the storms created deep holes in the ocean floor, so what might normally be a gradual slope can drop off unexpectedly. It is wise to swim at a beach with a lifeguard on duty and to inquire about

rip tides before going into the water. The beaches closest to Anaheim include:

- **Seal Beach**, south of Ocean Ave. in Seal Beach, which is just south of Long Beach. Swimming, surfing, picnicking, fishing. Parking is available at First and Main St. The Seal Beach Pier was destroyed by recent storms, but Belmont Pier is nearby at the end of Terminal Ave. on Ocean. Pier information: (213) 434-6781. Lifeguard information: (213) 431-3567.

- **Huntington State Beach**, west of Pacific Coast Highway in Huntington Beach. Lifeguards are in town on weekends; only patrolling lifeguards are on duty on weekdays. Swimming, fishing, picnic areas, volleyball (nets up). Ramps on the sand for disabled. Parking inside

the park at the north end and on Newland St. Information: (714) 536-3053.

- **Huntington City Beach**, west of Pacific Coast Highway between Main St. and Beach Blvd. in Huntington Beach. Surfing allowed only in the morning or on uncrewed days. Swimming, fishing, bike path, volleyball courts. Lifeguard. Information: (714) 536-5281.

- **Huntington Pier**, at Main St. and Pacific Coast Highway in Huntington Beach. The pier, built in 1914 and 1,500 feet long, sustained some damage in recent storms, but is open up to the bait and tackle shop. The pier also has snack bars and is floodlit at night for fishing and surfing.

- **Bolsa Chica Ecological Reserve**, east of Pacific Coast Highway and south of Warner Ave. in Huntington Beach. Endangered bird species can be seen in this

1,200-acre marsh area. Most of the marsh is private land, but there are two viewing areas from parking lots at Pacific Coast Highway and Warner Ave. and at Pacific Coast Highway across from the main Bolsa Chica Beach entrance.

- **Newport Beach and Pier**, west of Ocean Front and south of McFadden Lane in Newport Beach. Made of concrete and 1,642 feet long, the pier is floodlit at night for fishing. Surfing allowed near 30th St. in the afternoon. Swimming, volleyball, bike path, fishing. Lifeguard. Boardwalk near the pier.

- **Balboa Pavilion**, north end of Main St. in Balboa. Balboa Pavilion has been the center of Newport Harbor activities for 75 years. A seafood restaurant and gift shop are inside the pavilion, which also serves as the terminal for outboard motor glass skiff rental, day sea fishery, rental, Catalina Island cruises and Newport Harbor cruises. Information: (714) 473-5245.

- **Balboa Island**, Marine Ave. in Newport Beach. A boardwalk circles the island, which is in Newport Harbor. There is a bridge on the north side and a ferry is available from Balboa Peninsula. Ferry information: (714) 473-1070.

- **Newport Dunes Aquatic Park**, Bay-side Drive in Newport Beach. Swimming, boating, camping, picnicking. Lifeguard.

- **Corona Del Mar State Beach**, Ocean Blvd. and Iris in Corona Del Mar. Swimming, picnicking, volleyball. Lifeguard.

- **Laguna Beach (main beach)**, west of end of Broadway, west of Pacific Coast Highway in Laguna Beach. Boardwalk, swimming, playground, basketball and volleyball courts. Lifeguard.

- **Malibu Surferider State Beach**, 23,200 block of Pacific Coast Highway. Swimming, diving, fishing. Lifeguard. Malibu Pier was closed at present time for repairs for damage caused by storms. Information: (213) 456-8030.

## On May 18th, Computerworld launches its first communications satellite . . .

### COMPUTERWORLD On Communications

We are launching a new publication devoted to in-depth coverage of the broad spectrum of voice, image and data communications. Computerworld On Communications will examine communications issues, technology and applications from a systems perspective.

We recently did a study of Computerworld subscribers to determine their level of involvement and interest in communications. Of the 84% now using or planning to use communications equipment and services, 72% are personally involved in its selection and/or implementation. We found that these subscribers depend on Computerworld for communications information and prefer its coverage by more than 4 to 1 over the next publication in the field. This segment of our audience has a critical need for in-depth information on the constantly changing technology of communications.

As Computerworld expands its weekly news coverage of communications with interpretive information on products, equipment and services, Computerworld On Communications will complement that coverage with focused attention on the broader issues facing business communications users.

Computerworld On Communications will keep readers current on changing trends in the design, acquisition, operation, and optimization of corporate communications facilities. It will look at communications and networks from a systems perspective that relates technical details with corporate goals. In the June issues for 1983, Computerworld On Communications will apply the proven editorial resources of Computerworld to the area of communications networks. It will look at the implications of enhanced communications within the business organization together with the impact on established systems operations.



So, if you're among the majority of Computerworld subscribers who are personally involved in the selection and implementation of communications equipment and services for their organization, you'll find Computerworld On Communications a valuable addition to the Computerworld family of special publications.

As a Computerworld subscriber, you will automatically receive the two 1983 issues of Computerworld On Communications as part of your subscription. If you're not already subscribing to Computerworld, call toll free 800-343-0730.

Remember to look for Computerworld On Communications on May 18th and again on September 28th.

For advertising information on Computerworld On Communications, call Bill Dwyer, National Accounts Manager at (617) 879-0700 or your local Computerworld sales representative.

## Places Aboard To Retreat

(Continued from Preview/39)

soon became a popular rest stop for travelers to the growing pueblo of Los Angeles.

A hospice for overnight guests kept expanding as the number of visitors grew, and this "long building" still contains a number of artifacts—including a wine press and furniture of the period—and many of its rooms are intact. The small, narrow church has been restored and contains a large organ and an unusual mirror-backed altar.

The Mission San Fernando is open Monday through Saturday from 9 a.m. to 5 p.m.

The last stop on the local mission trail is the Mission San Buenaventura in Ventura. The city, one of the state's oldest, was originally a Chumash Indian settlement. The mission here, founded in 1782, was exceptionally prosperous. A reservoir and seven-mile aqueduct were built to transport water to the mission's vast grain fields.

Today on E. Main St., a small part of the mission's original holdings is still intact, including a museum with a small display of artifacts and a church. Here are the remains of two ancient wooden bells that wraps the only one of this kind in California and an old olive crusher. The grounds are open from 10 a.m. to 5 p.m.

## Premier Issue: May 18th

Bruce, Chris Lee, Ed Markert, Joe Pithguth, Jim McClure, Kathy Doyle, Diane Skuse, (617) 879-0700

Chicago: Art Kowalski, Neil Barrett, Jean F. Broderick, Chris Lee, (312) 627-4423

New York: Mike Masters, Doug Cherry, Ray Corbin, Joan Daly, Fred Lofgren, Gail M. Peters, (201) 987-1330

Atlanta: Jeffery Menck, Mike Mayers, (404) 364-0758

San Francisco: Bill Healey, Barry Milne, A. G. Geronzo, Theodore Frances, Ruth Gordon, Eileen Quinn, (415) 421-7330

Los Angeles: Jim Richardson, Bob Hubbard, Beverly Kous, (714) 556-6480

## Cincom Systems, Inc.

Cincom Systems, Inc. will exhibit its complete line of data base/data communications and applications products and services at Booth #7852.

Booth highlights will include demonstrations of Cincom's TIS, an integrated data base technology priced from \$150,000; Mantis, an on-line, interactive fourth-generation application development system priced from \$14,000; and Manufacturing Resource Planning System, a production and inventory control software system said to combine five modules, priced from \$65,000, ac-

ording to a vendor spokeswoman.

Other Cincom products and services that will be exhibited at NCC include:

- Series 80 foundation and facilitative software — Total, Environ/1 and Data Control System — and

ENV-Data, T-ASK, Socrates and LMS-II. A minimum configuration costs \$180,000, a spokeswoman said.

- Application software — Epoch-FMS, priced at \$50,000.

Cincom is located at 2300 Montana Ave., Cincinnati, Ohio 45211.

## Cullinet Software, Inc.

Cullinet Software, Inc. will be discussing its recently announced products at Booth #55262.

These include IDMS/R, a new ver-

sion of its IDMS data base management system that reportedly will combine network and relational architectures in one system; the Information Database, a mainframe-based information data base intended to provide access to mainframe data for personal computer users; and the Cullinet Personal Computer System, a data-base-driven applications software system for IBM Personal Computers, according to a spokesman for Cullinet.

More information can be obtained from Cullinet Software, which is located at 400 Blue Hill Drive, Westwood, Mass. 02090.

## McCormack & Dodge Corp.

McCormack & Dodge Corp. will be exhibiting the Version 2.0 of its Hilite query system as well as its full line of financial applications software, which runs on IBM and plug-compatible mainframes, at Booths N4302-N4304.

These include G/L Plus, its general ledger system, which ranges in price from \$52,000 to \$115,000; H/R Plus, the firm's human resource management system, priced between \$49,000 and \$154,000; A/P Plus, an accounts payable package that costs between \$31,000 and \$57,500; and F/A Plus, its fixed assets package, which ranges in price between \$37,000 and \$50,000. Hilite Version 2.0 is priced at \$15,000 for the first application and \$5,000 per additional application.

McCormack & Dodge is headquartered at 500 Hillside Ave., Needham, Mass. 02194.

## Batelle

Batelle will display its Basis text/numeric retrieval software and its Basis/DM relational data base management system at Booth #5576.

Basis runs on a variety of mainframes and minicomputers, including equipment from IBM, Control Data Corp., Sperry Corp. and Digital Equipment Corp. The vendor recently announced its availability on

Prime Computer, Inc.'s 50 series and Wang Laboratories, Inc.'s VS series of minis. Basis/DM is scheduled for release in mid-summer 1983.

The central system of the Basis products is priced at \$38,000 for the mainframe versions and \$26,600 for the minicomputer versions from the vendor at 505 King Ave., Columbus, Ohio 43201.

Digital Equipment Corporation  
Application Products Group  
cordially invites  
National Computer Conference attendees

to attend a  
Seminar and Lecture  
by Dr. David Whiteside  
on his evaluations of PRO IV  
and other fourth generation languages  
in the Cornwall North room  
Sheraton Anaheim  
1015 West Ball Road  
Anaheim, California  
Wednesday, May 18, 1983  
at 4:00 p.m.

Fourth generation languages such as PRO IV allow people with little or no computer training to write programs or develop specific applications.

PRO IV is a productivity tool used to define the characteristics of a data processing job. Its easy-to-use menus and "fill-in-the-blank" formats eliminate the requirement that a user learn a traditional computer programming language.

PRO IV is available on all Digital Equipment Corporation PDP-11 computer systems that run the RSTS/E, RSX-11M, and RSX-11M-Plus operating systems.

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## United Software Systems And Services Corp.

United Software Systems and Services Corp. will introduce Clio, a data base management system, at Booth P7904. All Clio functions were designed to operate as a global system, the vendor said.

The package includes a virtual space architecture that provides an infinite and logical view of data, permits change or additions to occur on-line without modification of existing data or programs, speeds application development and provides more flexible access and response for end users, a spokesman said.

Clio permits specification of a variety of data relationships including hierarchical, network, relational, inverted files and qualifiers. Users do

not need to know how data is structured, formatted or stored, the spokesman said. Add, delete and modify functions can be used in query mode without having to reorganize the data base.

Clio runs on most IBM mainframes, including 360, 370, 4300 series and 30 series under IBM's DOS, OS or VM/CMS operating systems.

The purchase price ranges from \$70,000 to \$80,000 with two- and three-year leases available. The company is located at Suite 1136, 1601 Ave. of the Stars, Los Angeles, Calif. 90067.

## Oracle Corp.

Oracle Corp. will be showing both mainframe and microcomputer versions of its Oracle relational data base management system at Booths D2232 and D2234.

Oracle offers multiuser capabilities, software development tools and automatic recovery from system failures in batch or on-line environments, according to a vendor spokesman for the firm.

The package costs from \$12,000 for minicomputers and mainframes.

A specialized version of Oracle for microcomputers costs \$600.

Oracle Corp. is located at 3000 Sand Hill Road, Menlo Park, Calif. 94025.

## Arthur Andersen & Co.

Arthur Andersen & Co. will be showing and demonstrating its manufacturing planning and control system as well as its information system methodology at Booth D0104.

MAC-PAC/38 is an integrated on-line manufacturing resource planning and control system written in RPG for the IBM System/38.

It features independent modules designed to enable companies to implement applications as they are needed or to install the entire system in phases.

The modules are individually priced between \$4,000 and \$6,000. The entire system, including all 10 software modules, is available for \$50,000.

Meth-2/1 is the firm's project management and systems development methodology.

These packages incorporate a "top-down" and "bottom-up" strategy approach to developing corporate data models and project models, a vendor spokesman said.

It is available for \$35,000, according to the vendor spokesman.

Arthur Andersen is headquartered at 69 W. Washington St., Chicago, Ill. 60602.

## Management Science America, Inc.

Management Science America, Inc. (MSA) will be showing its microcomputer-mainframe interface, which has been installed in user sites, at Booths 6049-6053.

The software allows users of the IBM Personal Computer and micros running under Digital Research, Inc.'s CP/M to download and analyze mainframe data developed by MSA's applications systems. The software component of the system is a variety of packages from Peachtree, Inc. called

Executive Peachpak.

Peachlink is the software component designed to allow the downloading of data from the mainframe to the microcomputer.

The other components are Business Graphics, Peachcalc, Peachtext, Telecommunications and List Manager.

Executive Peachpak reportedly is available with all MSA mainframe software systems and is priced at \$3,750 from 3445 Peachtree Road, Atlanta, Ga. 30326.

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No other micro  
can stand up to the Micro/PDP-11.



## Westinghouse Electric Corp.

Westinghouse Electric Corp. will be exhibiting the following products at Booths P7134-P7136:

- Visual Aide, a series of on-line utilities to aid programmers in maintaining and tuning IBM DOS/VSE systems, priced at \$3,000 for DOS/VSE and \$4,000 for VSE.

- Spoolprint, an on-line utility for routing individual entries in the spooler list queue to any printer in the teleprocessing network, priced at \$3,000 for DOS/VSE and \$4,000 for VSE.

- Mailtronic, an electronic mail package that includes full-screen input/update, priced at \$6,375 for DOS/VSE and \$7,000 for VSE.

Products for direct-access storage devices (Dasd) include:

- Disk Utility System, a set of programs for backup/restore/copy services in DOS/VSE or DOS-compatible environments, priced at \$3,000.

- Disk Space Manager, a set of system interfaces and

supporting utility programs for automatic space management of Dads, priced at \$5,000.

- Westoc, which produces a volume table of contents of any disk pack, priced at \$800. The Job Monitor II job accounting package provides utilization reports at a purchase price of \$3,500 for DOS and DOS/VSE.

APT/VSE is a language that translates numerical control programs on an in-house DOS/VSE system. It costs \$30,000.

Productivity aids on display include:

- Scepter, an on-line programming system priced at \$5,000 for DOS and DOS/VSE. The enhanced Scepter Plus costs \$5,500. Scepter

CICS is priced at \$6,000.

Teleprocessing products will include:

- Westi, an independent teleprocessing monitor with user-tailoring features, priced at \$15,000 for a local configuration and \$19,000 for a remote configuration. The company is located at 2040 Ardmore Blvd., Pittsburgh, Pa. 15221.

### Holland Automation

Holland Automation will be showing its Sales Order Processing module for the IBM Personal Computer and systems using Digital Research, Inc.'s CP/M operating system at Booths P7406-P7408.

Features of the package include integration with inventory, receivables, general ledger and sales analysis.

The Sales Order Processing module costs \$695, the vendor said from 3400-D, W. McArthur Blvd., Santa Ana, Calif. 92704.

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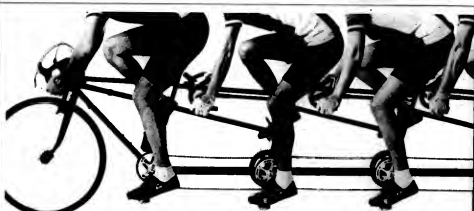
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And costs about \$200,000 less.

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There's our Z8000 series, the economical 16-user P/25, or the 40-user P/40.

Or choose the newly introduced P/35 or P/60 models for 32-bit performance.

They're both based on the 12.5 MHz MC68000. With the addition of a few, shall we say, high performance modifications.

Like an on-board 4K cache memory. 16K of high-speed on-board RAM. A high-speed memory map. And a 32-bit memory path.

## SAS Institute

At Booth W6530, SAS Institute will announce Fscalc, a new procedure in SAS/FSP (Full-Screen Product) and SAS/OR, an operations research tool for business planning and scheduling. Both products run on IBM 370, 30 series and 4300 series computers in batch under IBM OS, DOS/VSE and SX operating systems and interactively under IBM's TSO, VM/CMS and ICCF.

Fscalc is an electronic spreadsheet for financial modeling and analysis, which offers capabilities to perform "what if" analyses and financial analyses of new products and mortgage schedules.

The package includes an on-line Help facility; unlimited spreadsheet size; a modeling language that supports most features of the SAS Data step; the use of color to highlight protected and unprotected fields; the ability to define names for row and column and descriptions of rows; and varying column lengths.

Fscalc is available to current SAS/FSP users at no additional charge. The charge for SAS/FSP is \$3,600 for the first year and \$1,800 for each year thereafter.

SAS/OR offers procedures for linear programming and critical path method, general assignment problems, determining minimum cost flow through a network, maximum flow and shortest path; and determining the quantity of goods to be shipped from supply points to demand points. It will be available to SAS customers for \$3,000 for the first year, \$1,500 for each additional year.

SAS can be reached through Box 8000, SAS Circle, Cary, N.C. 27511.

Smoke Signal Broadcasting will introduce a family of integrated packages developed by United Software Co. for its OS-9 operating system. The software will be running on the firm's Chieftain multi-user computer system.

Total Management Planning (TMP) software packages include TMP/Manager, a structured data base manager priced at \$300; TMP/Calc, a spreadsheet package that is said to eliminate wraparound, priced at \$250; TMP/Freeform, an "electronic index card" package, priced at \$150; and TMP/Front End, which integrates other TMP packages and links the system with word processors, Basic, Cobol and other high-level languages, available at no charge.

Chieftain can run six users simultaneously for a cost of \$16,995, a spokesman said. The price includes six terminals, one serial printer, 20M bytes storage area, 20M bytes of tape streamer backup and the ability to expand to 12 users for about the cost of adding dumb terminals.

Smoke Signal is located at 31336 Via Colinas, Westlake Village, Calif. 91362.

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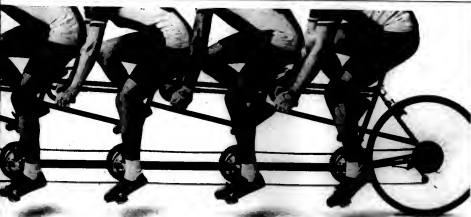
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## The Conference Program

### Thursday, June 23 & Friday, June 24

The Thursday and Friday conference program is divided into four major "tracks," but you are not required to sign up for a particular group of sessions. You may select the sessions you need from any of the 48 sessions available and create a conference program designed to suit your unique information needs. You may even choose to attend one day instead of two if you want. A detailed agenda will be sent to you prior to the conference for your advance planning, so you don't waste a minute!

### Special General Session for Thursday Attendees:

The Revolt of the Micro: Micros and the Changing Role of D.P.  
(3:00-6:00 p.m.)

Dr. Michael Hammer, President, Hammer & Company

### 1. Personal Computing in a Corporate Environment

For Executives in large corporations who are involved in using micros in distributed data processing or as stand-alone executive workstations, the EMCE conference program includes:

Keynote: Increasing Corporate Productivity via the Personal Computer (Thurs., 9:00-10:00 a.m.)

Moderator: Marvin Eisen, Executive Director of Systems, Ford Motor Company

The Executive Professional Workstations (Thurs., 10:00-11:00 a.m.)

Ernie Roth, Consultant, Arthur Andersen & Co.

D.P. with Microcomputers (Thurs., 2:00-3:30 p.m.)

Moderator: Gerald E. Davis, President, Office Systems International

Panelists: Phil D'Amico, MIS Manager, Apple Computer; Robert A. Miller, Special Assistant to the Deputy Secretary of Treasury, U.S. Treasury Department

The Information Resource Center (Friday, 3:45-5:15 p.m.)

Moderator: Thomas Kneech, Researcher, Stanford Business School

Panelist: Alan Gross, Director of Systems, International Paper Company

The Role of Apple and IBM in Corporate Computing (Friday, 3:45-5:00 p.m.)

Moderator: David Dennett, Publisher, "PC World"

New Issues of Confidentiality and Security in Organizational Information Processing (Friday, 9:00-10:00 a.m.)

Professor Alan F. Weston, Columbia University

Personal Computer Acquisition and Implementation Strategies (Friday, 10:00-11:00 a.m.)

Don L. Edie, Principal, Office Futures, Inc.

Compatible Systems and Software for the IBM PC (Friday, 2:00-3:30 p.m.)

Moderator: Steve Cook, Technical Editor, "PC World"

Panelists: Chris Larson, Product Marketing Manager, MS/DOS; Microsoft; Steve Flanagan, VP Software, Compaq Computer Corp.

2. Introduction to Microcomputing and its Applications

For Executives who are concerned with the selection and use of microcomputers primarily in smaller businesses, the EMCE conference highlights:

Keynote: The Personal Computer: The Message that Microsoft (Thurs., 9:00-10:00 a.m.)

Law Kordick, Director, Tandy Corporation

How to Buy a Personal Computer (Thurs., 10:00-11:00 a.m.)

Laurance Ginn, Director, Ginn Microcomputer Training School, Boston, MA

Spread Sheet Financial Applications (Thurs., 2:00-3:30 p.m.)

Moderator: Hannah Blum, Vice President-MIS, Chase Manhattan Bank

Panelists: Samuel Kharas, Mktg. Mgr., Standalone Products; Vee Corp.; Russell Warner, Product Mktg. Mgr., Endace Products, Morristown

New and Future Trends in Personal Computing (Thurs., 3:45-5:00 p.m.)

John C. Dvorak, Editor, "InfoWorld"

Word Processing Packages for Personal Computers (Friday, 9:00-10:00 a.m.)

Susan Herman, President, Transitions

DBMS on Personal Computers (Friday, 10:00-11:00 a.m.)

Chris Green, President, Softwarehouse

A Look at Integrated Software Packages (Friday, 2:00-3:30 p.m.)

Moderator: Dan Conway, Sr. Market Analyst, International Data Corporation

Panelists: Chris Morgan, VP Communications, Lotus Development Corp.; Brian Fickler, Sr. Vice President, Control Management Corp.; Roy Foltz, OEM Customer Mktg. Mgr., VisiCorp

Panel: Executives Personal Computer Success (Friday, 3:45-5:00 p.m.)

Moderator: Alan Swisher, Partner, Lucchetti & Horvath

3. Technological Developments in Personal Computing

For Executives who wish to keep up with changing microcomputer technologies in mass storage, business graphics, operating systems, and more, the EMCE conference highlights:

Keynote: The Future of Personal Computer Software for Business (Thurs., 9:00-10:00 a.m.)

Don Feltz, Chairman, VisiCorp

What's New in Peripherals (Thurs., 10:00-11:00 a.m.)

Fair Burgess, President, Burgess Management Associates

Panelists: Executives in Personal Computer Business Graphics (Thurs., 2:00-3:30 p.m.)

Moderator: Dave Nevill, Sr. Writer, "InfoWorld"

Developments in Mass Storage Capabilities (Thurs., 3:45-5:00 p.m.)

Moderator: Will Zachmann, VP, Office of Technology Assessment, International Data Corporation

Utilities (Friday, 10:00-11:00 a.m.)

Homes Galtner, President, LANX

Popular Programming Languages (Friday, 10:00-11:00 a.m.)

Gordon Eshenkov, Vice President, Commercial Systems Division, Digital Research, Inc.

Operating System Selection: 8 to 16 Bits (Friday, 2:00-3:30 p.m.)

Moderator: Marge Green, Editor-in-Chief, "InfoWorld"

Panelists: Gordon Eshenkov, VP Commercial Systems, DRI; Jean Tate, President, Vets Industries; Mark Urisso, OS Marketing Mgr., Microsoft Inc.; Niall Shuttleworth, Manager of US Mktg., Apple Computer

Developments in Networking (Friday, 3:45-5:15 p.m.)

Moderator: Will Zachmann, VP, Office of Technology Assessment, International Data Corporation

Panelists: Mark Stalman, Dir., Mktg. Development, General Instrument Corp.; Art Simon, Director of Mktg., CompuServe, Warner-Ames Cable Communications Inc.

4. Microcomputer Market Opportunities

For Entrepreneurs, Dealers, Distributors and Systems Houses, we'll offer sales and venture capital strategies you won't want to miss. Session highlights include:

Keynote: Retail Opportunities in the Personal Computer Marketplace (Thurs., 9:00-10:00 a.m.)

James Fisher, President, Intermarkets, Inc.

Software Packaging and Distribution (Thurs., 10:00-11:00 a.m.)

Will London, Director of Marketing and Retail Communications, Micropro International

Raising Venture Capital for Software and R&D (Thurs., 2:00-3:30 p.m.)

Moderator: Jim Fernandez, Partner, L.F. Rethickfield, Untermyer, & Thelen

Legal Issues for the Retail Distributor (Thurs., 3:45-5:00 p.m.)

Walter Klusman, Brown, Rapoport & Melville

Software Export: Competition from Japan (Friday, 10:00-11:00 a.m.)

Robert C. Wood, President, Robert Clapman Wood Company

Successful Training Strategies for Vendors and End Users (Friday, 2:00-3:30 p.m.)

Sue Connors, NEC Information Systems; Stephen Resnick, President, The E.D.

Delivering Good Maintenance, Service & Support (Friday, 3:45-5:00 p.m.)

John Harvett, Director of Planning and Development, TRW Customer Service Division

Selling the Corporate Account: Problems & Pitfalls (Friday, 9:00-10:00 a.m.)

5. Special Program for Educators

Saturday, June 25

Co-sponsored by T.H.E. Journal

For Educators and Administrators, EMCE will hold a special seminar on Saturday, June 25th entitled Microcomputers in Education and which includes the following sessions designed to suit the unique needs of educators:

Keynote: Computer Assisted Instruction in Education (9:30-9:50 a.m.)

Dr. Spivey Chapin, Editor-in-Chief, T.H.E. Journal

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- Financial application
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- Future trends
- And much more!

The Executive Microcomputer Conference and Exposition (EMCE) is sponsored by the Conference Management Group of CW Communications, Inc., publishers of *Computerworld*, *InfoWorld*, *ISO WORLD*, and *PC World*.

Computer Funding and Acquisition (9:30-10:30 a.m.)  
Ave. Callahan, Education Legislation & Technology  
Washington, D.C.

Logo: An Educational Language (10:45-11:45 a.m.)

Richard Curry, Director, Educational Laboratories, Linsky College

Teacher Training (11:55-12:15 p.m.)

Kevin Dwyer, Training Director, Unesco

Administrative Applications for Educational Institutions (2:15-3:15 p.m.)

Patricia Carter, Computer Applications Specialist, MASBO Co/Op

Educational Computing at Home (3:30-5:00 p.m.)

Moderator: Scott Marx, Sr. Editor, "InfoWorld"

Panelist: Ken Rosenthal, Executive Director, Educational Products

Information Exchange Institute; Richard Robinson, President

Scholarship Inc.

## Special Hands-On Workshop

Thursday, June 23 & Friday, June 24

In addition to the main conference program, EMCE will offer a two-day Executive Microcomputer Workshop for those professionals who wish to get hands-on experience with an Apple or IBM Personal Computer. The workshop will focus on four specific applications: spreadsheet analysis using VISICALC, data base management using dBase III, graphics and communications. An in-class network will be set up to demonstrate the communications capabilities of personal computers. The two-day seminar will run concurrently with the EMCE Conference program and will include admission to the exhibits and special feature sessions on Saturday, June 25.

The Executive Microcomputer Workshop will be sponsored by the Personal Computer Learning Center of New York City and will be held at the Center, located at 1120 Avenue of the Americas, on Thursday and Friday, June 23 & 24th. Enrollment is limited, so please register early with your choice of hands-on using either an Apple or an IBM PC.

## FREE Feature Sessions for All Saturday Attendees

FREE Special Feature Sessions for all Saturday EMCE attendees (colloquy or conference) will be held Saturday, June 25 from 9:00-1:00 p.m. The sessions will focus on personal applications for micros and starting your own home based business or office, and will also discuss the personal computer's impact on family life, kids and recreation.

1. The Home Office — Basics

Getting Started — Hardware & Where to Buy (9:00-9:00 a.m.)

Daniel P. Courtney, Senior Market Analyst, International Data Corp.

Software Applications — Selection & Uses (10:00-11:00 a.m.)

David Lamb, Sr. Research Associate, LINK

Setup & The First Six Months (11:00 a.m.-12:00 noon)

Paul Conover, President, Praxys Communications

Programming Languages (12:00 noon-1:00 p.m.)

A. Richard Miller, Partner, Miller Microcomputer Services

2. Professional Applications

A Look at Spread Sheet Applications (9:00-10:00 a.m.)

Ralph Wagner, President, Microcomputer Financial, Inc.

Investment Management Applications for Micros (10:00-11:00 a.m.)

Jon Zanderman, Contributing Editor, "Computer Update"

On-line Data Base Systems (11:00 a.m.-12:00 noon)

Steven Stark, Dir., Electronic Information Program, LINK

Word Processing Packages for Microcomputers (12:00 noon-1:00 p.m.)

Rosette Marshall, Contributing Editor, "The Symbol Report"

3. Home/Family Microworld

Household Management (9:00-10:00 a.m.)

Micros for Organizations & Groups (10:00-11:00 a.m.)

Home Micro-Based Businesses (11:00 a.m.-12:00 noon)

A. Richard Miller, Partner, Miller Microcomputer Services

Micros: Impact on Family Life, Kids & Recreation (12:00 noon-1:00 p.m.)

Don Ashton, Executive Producer, Children's Computer Workshop

## Over 100 Professional Exhibits at EMCE

EMCE exhibits offer the latest in business-oriented hardware, software, peripherals, systems, accessories and resources from a wide selection of suppliers including companies like IBM, Digital Equipment Corporation, BASF Systems Corp., Computerland, Addison Wesley, GRID Systems, Micro Systems International, Key Software and Victor Electronics . . . to name just a few. EMCE's designed for you to see, touch and learn what you need to know about micros. Your conference registration includes complete, 3-day exposition attendance. Or you can sign up for the exhibits only. If you register in advance, using the form in this ad, you get two bonuses:

1. **Early admission** — only conference registrants and advanced registrants will be admitted to the hall between 11 a.m. and NOON on Thursday and Friday.
  2. **\$5.00 discount** on admission price at the door.
- Register for EMCE now! The Sheraton Centre in New York City is the place, June 23-25, 1983 are the dates. Exposition hours: 11-7, Thursday and Friday; 10-6, Saturday. For more information on the conference and exposition, dial 1-800-225-4698 (in Massachusetts, 617-879-0700) and ask for Louise Myerco.

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- ☐ One Day Conference Registration\* \$195
- ☐ Thurs. only ☐ Friday only
- ☐ Executive Microcomputer Workshop\* \$195
- ☐ Thurs. and Friday
- ☐ Chairman ☐ Apple ☐ IBM PC
- ☐ Micro in Education \$ 95
- Sat. June 25

\*Includes Saturday Special Features Programs

Conference registrants **only** may register by phone: Call 800-225-4698. In Mass. call collect 617-879-0700 and ask for Louise Myerco.

Registrations Controlled later than June 15 are subject to a \$50.00 service charge. Registration may be transferred at no charge.

EMCE — Sheraton Centre, New York City June 23-25, 1983

☐ YES: Register me for EMCE (58 not attached conference form)

☐ YES: Register me for EMCE Exhibit Only (10 not attached exhibit form)

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MAC3

### Exhibit Only Registration

SAVE \$5 by Registering in Advance and Get Early Admission. (Only Advance registrants will be allowed into show between 11:00 a.m. and NOON on Thursday and Friday.)

☐ Advance Pre-Paid 3 day exhibit registration \$30 (\$25 at door)

☐ Advance Pre-Paid 1 day exhibit registration \$10 (\$15 at door)

☐ Thurs. ☐ Friday ☐ Saturday

3-Day Exhibit Registration Includes Special Feature Sessions on Saturday, June 25th from 9:00 a.m. to 1:00 p.m.

You must enclose your check or charge information. We cannot bill you or take your exhibit registration over the phone. Exhibit registration is non-refundable.

## Micro Data Base Systems, Inc.

Micro Data Base Systems, Inc. will be displaying its MD8S III data base management system and related products at Booth D408.

MD8S III runs on a variety of microcomputers, including those based on Zilog, Inc. Z80 and Intel Corp. 8086 microprocessors. It ranges in price from \$2,250 to \$18,000, depending on options and environments.

The MD8S III Query Retrieval System, a data base query system designed to permit ad hoc report generation from any MD8S III data base, is priced from \$1,100 to \$3,750, depending on particular user options and environments.

Also shown:

- **Screen Master**, a general-purpose interactive screen-management system for Digital Equipment Corp. PDP-11 minis and Z80-based microcomputers, is priced from about \$700 to \$1,900.

- **KnowledgeMan Decision Support System**, which runs on DEC PDP-11s and microcomputers, is available for \$250 before June 1 and \$500 thereafter.

More information is available from International Software Enterprises-USA, Inc.

The firm is located at Suite 400, 85 W. Algonquin Road, Arlington Heights, Ill. 60005.

## Reston Publishing

Reston Publishing Co. will be at Booth D0512 demonstrating its Professional Applications Systems Software, a series of application development aids designed to be implemented on the IBM Personal Computer in conjunction with Lotus Development Corp.'s 1-2-3 spreadsheet, graphics and data base management system.

These programs include:

- **Executive Assistant Toolkit**, which consists of 12 data bases designed to improve time and task management.

- **Personal Finance Toolkit**, a set of personal financial planning and management tools for tracking day-to-day expenses, future planning and projection.

- **Tax Planner Toolkit**, which allows the user to use Lotus 1-2-3 to plan and manage personal taxes.

Each Toolkit costs \$70 from 11480 Sunset Hills Road, Reston, Va. 22090.

# Addison-Wesley Publishing Co.

Addison-Wesley Publishing Co. will be displaying a variety of products from its new Applications Software and Higher Education and General Books divisions at Booth N3716.

Addison-Wesley's new Applications Software Division will exhibit decision support software, including Micro-DSS/Analysis, which

runs on the Apple Computer, Inc. Apple II and carries a suggested retail price of \$495. Also featured will be Burns, Equip and Purchase, the firm's initial offerings in its Micro-Education Support System Series. Designed to run on the Radio Shack TRS-80 Model I and III and the Apple II, each package has a suggested list price of \$195.

A number of professional resource books will also be shown, including new materials on Ada, Bell Laboratories' Unix and Xerox Corp.'s Smalltalk-80.

The firm's General Books Division will feature *The Business Guide to the Unix System* by Rebecca Thomas, Jean Yates, Sandra Emerson and Joe Campbell (488 pages,

\$19.95, July 1983); *Teach Yourself Apple Basic* by Peter Mears of the University of Louisville (192 pages, 5 1/2-in. disk, \$34.95, July); and *CP/M And the Personal Computer* by Thomas A. Dwyer and Margot Critchfield (456 pages, \$19.95, May).

Addison-Wesley is headquartered in Reading, Mass. 01867.

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## IMSL, Inc.

At Booths P7353-P7355, IMSL, Inc. will be showing its recently released Edition 4 of its Twodep finite element program for Digital Equipment Corp.'s Decsystem-10 and Decsystem-20 mainframes. The firm will also be demonstrating its IMSL Library for Hewlett-Packard Co.'s HP 1000 series processors and its IMSL Math/Protran and Stat/Protran packages for DEC's VAX-11 series processors.

Edition 4 of Twodep solves time-dependent, steady-state and eigenvalue problems in general two-dimensional regions. The package was designed for use in applications involving elasticity, diffusion, minimal surfaces, potential energy and Schrodinger equations. The package costs \$2,000 a year for an initial subscription and \$1,500 a year for renewals, the vendor said.

The IMSL Library for the HP 1000 series of processors is a collection of more than 540 Fortran subroutines for statistical problem solving. The package can be used as a building block for developing scientific and engineer-

ing applications. The package costs \$2,000 a year for an initial subscription and \$1,500 for renewals, the vendor said.

The firm's Math/Protran and Stat/Protran programs are compatible with DEC's VAX-11 Fortran compiler and were designed for problem-solving statistical and

mathematical applications. Math/Protran costs \$3,000 for the first year and \$2,000 a year thereafter. Stat/Protran costs \$2,500 for the first year and \$1,500 thereafter. Both programs are available for \$4,500 a year and \$3,000 for renewals. The firm is located at 7500 Bellaire Blvd., Houston, Texas 77036.

## Mathematica Products Group

Mathematica Products Group (MPG), a division of Mathematica, Inc., will be featuring its Ramis II in Booth P7432.

The fourth-generation language includes data base management, an integrated data dictionary, tabularly and graphics reporting, fi-

nancial modeling, application management, data maintenance, interactive editing, screen formatting and relational data access.

The basic RAMIS II system ranges in price from \$40,000 to \$80,000. MPG is located at Box 2392, Princeton, N.J. 08540.



## Computer Intelligence

At Booths P7346-P7348, Computer Intelligence Corp. will be explaining its "Personal Computers in Key Accounts" (Pika) program.

This information service is designed to identify large-volume users of microcomputers in key accounts. Pika reportedly provides installed user data and highlights their 1983 buying plans. The program is said to uncover companies with up to 2000 computers installed and several more planned for 1983.

The information provided highlights volume-buying plans for personal computers in large accounts; microcomputers currently installed; groups or individuals responsible for acquisition; applications areas planned; current micro buying standards; and personal computers communicating or networking. Information is collected directly from users by the firm's staff via 1,500 telephone surveys conducted monthly to large and medium-scale computer sites in the firm's Computer Installation Data File.

The subscription cost of the service is \$500/mo to \$1200/mo depending on the selection criteria. Computer Intelligence is located at 3344 N. Torrey Pines Court, La Jolla, Calif. 92037.

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# Communications

## Micom Systems, Inc.

Micom Systems, Inc. will feature its entire line of communications networking products in Booth W6496.

Micom's exhibit will feature the company's Micro600 Data Private Branch Exchange (PBX), which can now be linked together with a transparent interconnect facility, allowing users to install local-area networks at geographically dispersed locations or to fulfill the requirements of large single sites with thousands of terminals and computer

ports. In a network of Micro600s, users can be granted access to any resource available on any of the inter-connected PBXs. The PBX costs \$800.

Other products to be presented at the booth include:

- The Micro860 Concentrator Switch, an intelligent networking device that connects up to eight Micro800/2 Data Concentrators, providing a number of add-on networking functions — add-on switching, channel contention, queuing and centralized management — to what would

otherwise be a collection of point-to-point links. The switch is priced at \$2,550 for a four-composite model and \$3,250 for an eight-composite version.

- The Micro4000 Model 4096/4+ multipoint model, which combines a time-division multiplexer with a 9,600 bit/sec modem in a single package to support up to four synchronous terminals or channels on one unconditioned telephone line. The modem is priced at \$3,695.

- A dial backup unit to be offered in free-standing packaging, integrated with the company's Micro4000 Models 4045/V.22+ and 4096 modems, and as a card module for use with rack-mounted Micro4000s. The unit is priced at \$775, and a card-module version sells for \$650.

- An X.25-compatible concentrator pad, which reportedly packetizes data from as many as 16 asynchronous terminals or computer ports for transmission over a single telephone line to a public or private X.25 packet data network. The price for the Mi-

cro800/X.25 concentrator pad starts at \$2,050.

Micom is located at 20151 Nordhoff St., Chatsworth, Calif. 91311.

## Racal-Milgo, Inc.

Racal-Milgo, Inc. will display its Model 8278 display stations, a family of data terminal equipment functionally compatible with the IBM 3278 series, at Booth N3710.

The 8278 family has four available models that operate in an IBM Systems Network Architecture (SNA) and non-SNA network structure.

The Model 8278 display stations can be attached to the Racal-Milgo 4270 series of IBM-compatible remote and cluster controllers, a vendor spokesman said.

Prices range from \$1,999 to \$2,556. The vendor is located at 6250 N.W. 27th Way, Fort Lauderdale, Fla. 33309.

## Visual Technology, Inc.

Visual Technology, Inc. will highlight its line of graphics terminals and CRTs in Booth 55350.

Among the units on display will be the Models 500 and 550 micro-processor-based graphics terminals. Emulating the Tektronix, Inc. 4010, the units are said to feature vector draw, point plot, rectangle draw and multiple line styles.

The Model 500 provides switchable emulations of Digital Equipment Corp. VT32, Data General Corp. D200, Lear Siegler, Inc. ADM-3A and Hazeltine Corp. 1500 terminals. The Model 550 is a buffered editing, block-mode terminal.

The Model 500 costs \$2,495, and the Model 550 costs \$2,695 from 540 Main St., Tewksbury, Mass. 01876.

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## Micro-Term, Inc.

Micro-Term, Inc. will show its Ergo 301 and Ergo 201 terminals at Booth S5097, as well as a graphics board capable of reproducing both Plot 10 and Regis-compatible graphics.

Priced at \$895, the Ergo 301 emulates Digital Equipment Corp.'s VT100 terminal, including that terminal's video capabilities, 132-col display and printer port features. Other features include two pages of memory, plain-English set-ups, user-programmable function keys, transparency mode and Xoff indication. Options include an amber phosphor display and Plot 10/Regis compatible graphics, which can be installed for \$1,790.

The Ergo 201 terminal emulates Televideo, Inc.'s 925, Lear Siegler, Inc.'s ADM3A, DEC's VT52 and the vendor's ACT-5A terminals. The unit's detachable keyboard has 16 host-definable func-

tion keys, which may be downloaded from the host with a sequence of up to 10 bytes. Other features of the terminal include five video attributes, which can be used in any combination with no use of a character space, and a custom mode that enables the operator to define the terminal's control codes and

escape sequences. Also standard is a 25th status line with five modes of operation, nonvolatile soft set-up mode and settable tabs.

The Ergo 301, 201 and graphics board are priced at \$995, \$695 and \$1,095, respectively, the company said, from 1314 Hanley Industrial Court, St. Louis, Mo. 63144.

## Universal Data, Inc.

Universal Data, Inc. will display at Booths D1301 and 1302 its UDI-100 general purpose hand-held terminal, said to allow users to enter specific data, data-type verification factors, totaling and, match options.

A two-line alphanumeric display allows viewing of the data. A data-entry mode

is provided as well as a bar-code wand. Entered data is checked against the programmed parameters and correct data is stored in memory, the vendor said.

The UDI-100 with 32K bytes of memory is available for \$1,995 from the vendor at 3960 M-15, Clarkston, Mich. 48016.

## Megadata Corp.

In Booths S5079-S5083, Megadata Corp. will exhibit its Series 8000 Smart Multiplexor and Very Intelligent Terminals.

The Series 8000 terminals feature a low-profile, detached programmable keyboard with up to 155 keys. The Model 8188 is the stand-alone version.

In the same booths will be TSD Display Products, Inc., a Megadata subsidiary, to exhibit its touch-screen digitizer.

The Series 8000 terminals range from \$950 (cluster terminal) to \$4,000 (very intelligent controller).

The TSD touch-screen digitizers range in price from \$1,030 to \$1,250 for quantities of one or two.

Megadata is located at 35 Orville Drive, Bohemia, N.Y. 11716.

## Innovative Electronics, Inc.

Innovative Electronics, Inc. will display at Booth S5049 its MC-80/600 protocol converter, which is part of the vendor's MC-80 line of protocol converters.

The device is self-contained and connects independent terminals to most IBM, Burroughs Corp. and NCR Corp. computers. It also provides conversion between IBM 3270 BSC and an asynchronous Ascl device.

It costs \$1,495 from the vendor at 4714 N.W. 165th St., Miami, Fla. 33014.



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## North Star Computers, Inc.

A low-cost local-area network from North Star Computers, Inc. will be featured by the vendor at Booth W6358.

The vendor will also be demonstrating its 15M-byte hard disk microcomputers, the Advantage and the Horizon (\$5,999), along with recently developed financial analysis (\$499) and graphics software (\$249) and enhanced word processing software (\$499).

Northnet is said to provide a multi-tier upgrade path for the company's installed base of Advantage microcomputers. It allows system users to intercommunicate via electronic mail, tap large central files and ex-

pand their output options through the shared use of peripherals including printers, plotters and communications devices, the vendor said.

Under Northnet, users can link a total of 64 North Star workstations.

## Tandem Computers, Inc.

Tandem Computers, Inc. will display at Booth W6078 its Alternate Input Interface, said to allow machine-readable information to be entered directly into a Tandem 6530 Multi-Page Display Terminal.

The interface reportedly provides a flexible means of entering a variety

of machine-readable information. This supports bar-code readers, optical-character readers types A and B, magnetic-stripe readers and other devices that output Ascii characters.

North Star is based at 14440 Catalina St., San Leandro, Calif. 94577.

It is available for \$350 from Tandem Computers, 19333 Vallico Pkwy., Cupertino, Calif. 95014.

## Sytek, Inc.

Sytek, Inc. will display at Booth D2400 its Localnet 50/120 statistical monitor, said to provide network management. It is the company's multichannel broadband local-area networks with a digital, analog interface and power electronics data for monitoring a Localnet channel.

Users can specify a time period during which the Localnet 50/120 statistical monitor's screen will display cumulative information and peak-value data on the number of data packets transmitted, characters sent, sessions corrected, a histogram of packet lengths and the percentage of channel usage, a vendor spokesman said.

The Localnet 50/120 statistical monitor is available for \$1,895 from Sytek, which is located at 1225 Charleston Road, Mountain View, Calif. 94043.

## Raytheon Data Systems Co.

Raytheon Data Systems Co. will introduce at Booths P8152-P8160 its local-format storage-cluster controller for its FTS-2000 intelligent terminal.

The controller is said to give users of IBM 3270-type systems the capability of storing up to 100 or more formats at a remote site, saving computer time and line traffic. Typical local-storage-format savings of 60% have been recorded.

The cluster controller is available for \$8,100 from the vendor at 1415 Boston-Providence Tnpk., Norwood, Mass. 02062.

## 3Com Corp.

At Booth D2406, 3Com Corp. will be showing its IBM Personal Computer Etherseries of hardware and software products for IBM's Personal Computer.

Included in the display will be Etherlink, a plug-in controller transceiver board that connects an IBM Personal Computer to a Xerox Corp. Ethernet local-area network providing shared access to hard disks, printers and electronic mail features. Etherlink costs \$950, the vendor said.

Also on display will be the firm's Ethershare network server, which consists of a 40M-byte disk drive, and specialized software.

The Ethershare network server reportedly allows multiple Personal Computers to access information on a shared hard disk.

In addition, Etherprint, a special printing software package, and Ethermail, an electronic mail package, can be used in conjunction with Ethershare, according to a spokesman for the vendor.

Ethershare costs \$14,500. Etherprint costs \$750, and Ethermail costs \$1,500, the vendor said from 1390 Shorebind, Mountain View, Calif. 94043.

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## Teltone Corp.

Teltone Corp. will show its line of multiplexers at Booth #7706.

On display will be the firm's Teltone M-825 data multiplexer, which can be used in private data networks over four-wire circuits. The multiplexer was

designed to accommodate 32 RS-232C asynchronous full-duplex data sources with a maximum rate of 9,600 bit/sec on all ports simultaneously. The unit costs \$3,200, the vendor said.

Also, the firm will be showing the M-860 statistical

multiplexer, which provides composite link speeds up to 76,800 bit/sec. The unit can be configured with from eight to 32 asynchronous input channels at individually programmable speeds of 50 to 9,600 bit/sec. An eight-channel RS-232C version of the M-860 is priced at \$2,400.

Teltone's Data Carrier System, the DCS-2, a two-to-eight-channel package which can grow into a large-scale data communications network, will also be shown.

The DCS-2 adds a data channel to a private automatic branch exchange telephone system for simultaneous voice and data communications on local telephone pairs. Terminals can be placed wherever a telephone is located without tying up a telephone. A two-channel system costs \$1,500. An eight-channel system costs about \$474 per channel, the vendor said, from 10801 120th Ave. N.E., P.O. Box 657, Kirkland, Wash. 98033.

## Digital Engineering

Digital Engineering, Inc. will feature its Gen.II Retro-Graphics add-on packages for Applied Digital Data Systems, Inc. (Addis) and Teletype, Inc. terminals in Booth D230.

The software reportedly features full emulation of the Tektronix, Inc. 4010 series of graphics terminals and monochrome emulation of the graphics functions of the Tektronix 4027 color graphics terminal.

A printed-circuit board assembly, Gen.II is powered by an 8-bit microprocessor and provides a screen resolution of 640 by 240 pixels. Designed for Addis Viewpoint and Viewpoint/3A Plus terminals, as well as Teletype 910, 912, 920, 925 and 930 terminals.

minals. Gen.II costs \$1,095 from 630 Beret Drive, Sacramento, Calif. 95814.

## Computer Transceiver Systems

Computer Transceiver Systems, Inc. (CTSI) will introduce its Execuport 443 and exhibit a variety of its Execuport line of terminal printers at Booths #7213-

#7215.

The Execuport 443 is said to be a plain paper printing terminal with a memory capacity of 16,384 characters to its Execuport 400 line and is reported to be ideal for electronic mail and time-sharing applications.

Among the Execuports on display will be the 1,200 bit/sec, 120 char./sec 4120 terminal system; the 1,200 bit/sec,

120 char./sec buffered, editing 4120 Batch/Send/Receive; the P200 OEM thermal printer; the 400 series portable plain paper impact terminals; the Execuport-Sherlock security system; and the 4000 series graphics terminal.

Execuport systems range in price from \$795 to \$4,000. CTSI can be reached through P.O. Box 15, E. 66 Midland Ave., Paramus, N.J. 07652.

## M/A-COM, Inc.

M/A-COM, Inc. will show its CP9000 high-performance communications processor and its product line of data communications multiplexers, with an emphasis on its Advanced Switching and Advanced Statistical models, at Booth #4708.

The ASM49200 multiplexer is said to allow total system interconnectivity, reduce the number of CPU multiplexer ports and give the user

switched networks. The 9100 statistical multiplexer is best used where there is a need to connect a number of remote devices to a host, the company said. Both are available with integral modems.

The four-channel 9200 is priced at \$3,050, the 9100 at \$2,450 and the CP9000 communications processor starts at \$35,000 from the vendor at 11717 Exploration Lane, Germantown, Md. 20874.

## Terminal Rentals, Inc.

Terminal Rentals, Inc. will display products it sells from its retail outlets at Booth #4402.

These products include:

- NEC 7710 word processor (\$2,500).

- Teletype 950 CRT (\$1,022).

- Qume 11/40 word processor (\$1,429).

- 3M Whitespace electronic mail device (\$1,135).

- Diablo 630 printer (\$1,799).

Terminal Rentals is located at 2722 Walnut Ave., Tustin, Calif. 92680.

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## American Bell AIS

American Bell, Inc.'s Advanced Information Systems (AIS) division will feature the AIS/System 85, the newest member of its product family, at Booth #3900.

Like all of the firm's Dimension products, the System/85 features integrated voice, high-speed data and networking capabilities. It also boasts an expendable architecture and a Digital Communications Protocol (DCP).

The System/85 is lease priced from \$6,939 to \$17,500 per month, depending on equipment configuration, from American Bell Information Systems, located at 100 Southgate Pkwy., P.O. Box 1955, Morristown, N.J. 07960.

## Ann Arbor Terminals

Ann Arbor Terminals, Inc. will be exhibiting its Genie and Genie-Plus terminals at Booths W6613 and W6614, both of which have been announced but not shown previously.

Genie features Ansai on-line editing, a 15-in. non-glass screen and full diagnostic, while the Genie-Plus features full editing, a scrollable 60-line memory, and 60 programmable keys.

Genie is priced at \$1,195 and Genie-Plus at \$1,395 from Ann Arbor Terminals, Inc., 6175 Jackson Road, Ann Arbor, Mich. 48103.

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## Communications at NCC '83

Preview/58

# KMW Systems Corp.

KMW Systems Corp. will be demonstrating a number of products here in Booth N3756, including its recently announced Series II 3770 Protocol Converter product line.

The Series II 3770 reportedly sends and receives EBCDIC data via an IBM Systems Network Architecture (SNA) network using Synchronous Data Link Control. The unit performs all required error-checking functions and data translations, according to a spokesman for the vendor.

It also outputs or inputs the data in serial-asynchronous or byte-parallel format to and from user-attached devices, according to the vendor spokesman. Pricing for Series II 3770 starts at \$4,550.

Also on display will be KMW's Series II Haap protocol converter, which reportedly emulates the IBM 360/370 RJE workstation. This product also costs \$4,550, according



Series II 3770

to a spokesman.

The Series II 3270 interactive protocol converter from KMW allows connection and operation of a number of peripheral equipment to IBM mainframes by emulating an IBM 3274 SNA or 3271 Bisynchronous Communications, according to the vendor.

Communications for the Series II

Haap is also handled through IBM Binary Synchronous Control using a modem connection following standard EIA RS-232C interfacing. User attachment of peripheral devices is provided via asynchronous ASCII RS-232C or byte parallel interfaces, the spokesman noted. This product is priced from \$3,095.

The KMW VP30 Vector Processor is designed to accept random vectors, symbols and other graphics information from a host mainframe, reduce it to raster form and drive an electrostatic or laser plotter. Pricing starts at \$19,500 for this product, according to the vendor.

In addition, the Series II 2780/3780 protocol converter, which uses IBM binary synchronous protocol to transmit and receive EBCDIC data, will be exhibited. This product costs \$4,995.

KMW is based at 8307 Highway 71 W., Austin, Texas 78735.

## Megatek Corp.

Megatek Corp. will introduce a monochrome engineering desktop terminal in Booth N3826.

### Kimtron Corp.

Kimtron Corp. will be showcasing an enhanced version of its IBM 85 display terminal here in Booth F7518.

The H model is said to be equipped with a detached keyboard, high-resolution display and 128 displayable character codes.

Pricing on this product starts at \$795, the vendor said from 2225-I Martin Ave., Santa Clara, Calif. 95050.

## Intersil Systems

Intersil Systems, Inc. will be showing its Genet, a broadband CATV 802C-compliant local-area network at Booth P6052.

The display will also include the firm's 4004 bus interface unit, which reportedly will be communicating with Intersil's Sunnyvale, Calif., headquarters.

A minimal workable local-area network system costs between \$10,000 and \$12,000, the vendor said from 1275 Hammerwood Ave., Sunnyvale, Calif. 94086.

## Innovative Electronics

Innovative Electronics, Inc. will display at Booth 35049 its MC-80/600 protocol converter, which is part of the vendor's MC-80 line of protocol converters.

The device is self-contained and connects independent terminals to most IBM, Burroughs Corp. and NCR Corp. computers. It also provides conversion between IBM 3270 Binary Synchronous Communications and an asynchronous ASCII device, the vendor said.

It costs \$1,495 from the vendor at 4714 N.W. 165th St., Miami, Fla. 33014.

The Whizzard 1645 is said to feature Digital Equipment Corp. VT-100/52 compatibility, allowing users to perform graphics design functions, a vendor spokesman said.

It also allows software development, documentation and report generation, according to the vendor spokesman.

The unit is suited for such design applications as integrated and printed-circuit board and finite element design, the vendor spokesman claimed.

The Whizzard 1645 costs \$13,900 from the firm, which is located at 3985 Sorrento Valley Blvd., San Diego, Calif. 92121.

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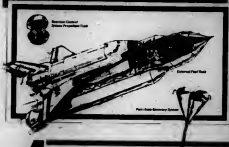
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NCC '83

Preview/59

## NCR Corp.

NCR Corp. will direct its energies toward exhibiting its personal computer line, small-business computer, and small-business mainframe at Booth 55074.

The Decision Mate V microcomputer series and Decision Net non-proprietary local-area network for linking micros are aimed at the business and professional markets. Single- and dual-processor models of Decision Mate V are available with up to 512K bytes of memory, flexible or Winchester disk drives and color graphics capabilities.

The Tower 1632 multiuser small-business computer, which is being sold to systems houses, features a 16-bit Motorola, Inc. 68000-based processor, an operating system derived from Bell Laboratories Unix III and data storage fixed through Winchester disk drives.

The 9300 32-bit mainframe for business applications features very large-scale integration technology, a range of communications capabilities and a library of software productivity tools. The system can be config-



NCR Corp. Tower 1632

ured with peripherals to serve as a stand-alone information processing system for small businesses.

The Decision Mate V starts at \$2,800, the Tower 1632 at about \$16,000 and the 9300 small-business mainframe at about \$24,000 from NCR Corp., World Headquarters, Dayton, Ohio 45479.

## Zenith Data Systems Corp.

Zenith Data Systems Corp. has extended its Z-100 line of desktop computers with the introduction of two models featuring built-in 5-in. 11M-byte Winchester disk drives. These systems will be on display in Booth 55000.

The Winchester drive is said to increase the Z-100 storage capacity more than 17 times to 11M bytes, giving it the ability to hold all the accounting functions of a business. Zenith is reportedly making the enhanced Z-100 systems available in both a low-profile version and an all-

in-one edition featuring built-in video display. The Z-100s are available for \$5,499 and \$5,599, respectively.

Zenith also will be showing the newly developed Z-29 terminal, an on-screen, menu-driven system (\$849); an 8-in. disk drive in both single- or dual-drive versions (\$1,599 and \$2,299, respectively); and a 256K-byte random-access memory card for the Z-100 series of desktops (\$799).

Further details can be obtained from Zenith at 1000 Milwaukee Ave., Glenview, Ill. 60025.

## Bell & Howell Co.

Among the products Bell & Howell Co. will display at Booth D1650 is a cut-fiche, computer-output microfilm (COM) recorder.

The Model 6600 is self-contained and will process wet or dry microfilm and produce ready-to-duplicate, original cut microfiche in less than 60 seconds.

The Model 6600 utilizes a Digital Equipment Corp. PDP-11 minicomputer, a 6601 COM recorder, tape drive, dual floppy disk drives, hard-copy and CRT terminals.

Prices range from \$15,000 to \$159,000, the spokesman said from the firm at 16691 Hale Ave., Irvine, Calif. 92714.

## Solosystems, Inc.

Solosystems, Inc.'s 1116 Workstation for IBM OS/VS Cobol Programming will be on display in Booth D308.

The 1116 is a stand-alone desktop workstation for writing, editing, compiling, testing, documenting and maintaining IBM OS/VS Cobol pro-

grams. The microcomputer reportedly provides users with off-line testing for Cobol program modules and an integrated collection of programming tools not on a mainframe.

The system is priced from \$35,000. Solosystems is based at 482 Oakmead Pkwy., Sunnyvale, Calif. 94086.



DEC's Interactive Video Information System

## DEC

Digital Equipment Corp. will be showing its multimedia "video learning station," which is said to incorporate a newly devised hardware/software option for its Professional 350 personal computer, in Booth W6028.

This announcement comes in the wake of DEC's Vaxcluster announcement, a configuration concept that links up to 16 VAX-11 machines to function as a single, large, highly powerful system.

The Interactive Video Information System (Ivis) integrates moving or still television pictures with computer-generated text and graphics on the Professional 350 color monitor, ac-

ording to a DEC spokesman. To support the entry, DEC simultaneously announced programs to handle courseware development, courseware acquisition and consulting services.

The Ivis option reportedly enables DEC personal computer users to combine natural video images with text and graphics overlays and synchronized sound, resulting in a dynamic interactive presentation, the vendor said. It is intended for use by industrial, government, military and educational organizations.

A minimum working Ivis configuration costs \$12,624 from DEC headquarters in Maynard, Mass. 01754.

## Altos Computer Systems, Inc.

Altos Computer Systems, Inc. (ACS) will be demonstrating its ACS 586 microcomputers, which can reportedly support from five to eight users, at Booth W6218.

The 586 line offers both Xerox Corp.'s Ethernet and Altos-Net networking capability, allowing the computer to serve a small or large business, while using the Intel Corp. 8086 processor with 256K or 512K bytes of random-access memory. Operating software available includes Unix/Xenix, MS-DOS, Pick and Associates, Inc.'s Pick and CP/M.

The 586/10 with 10M bytes of main memory is priced at \$7,990 from ACS at 2360 Bering Drive, San Jose, Calif. 95131.

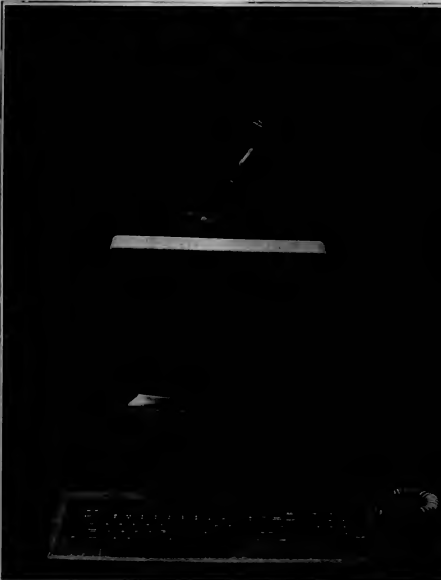
## Molecular Computer

Molecular-Computer will be displaying three members of its Supermicro family of 8/16-bit multiuser microcomputers at Booth P7644.

All three systems have a multi-processor architecture made up of an internally mounted 8-bit applications processor that contains 64K bytes of random-access memory (RAM) and a separate file processor that holds up to 256K bytes of RAM. The systems run Digital Research, Inc.'s CP/M and CP/M 86 application software.

Optional Intel Corp. 8086 shared processors are also available. They hold up to 1M byte of RAM.

The Supermicro 8 with 10M bytes of Winchester disk storage supporting eight users costs \$5,995, with each additional applications processor priced at \$695. The Supermicro 32X with 60M bytes of Winchester storage and supporting 32 users lists for \$18,995 with each additional applications processor priced at \$995. The Supermicro 64X with 136M bytes of storage accommodating up to 64 users simultaneously costs \$22,995 with additional applications processors priced at \$995 each, the vendor said from 251 River Oaks Pkwy., San Jose, Calif. 95134.



## Honeywell, Inc.



Honeywell, Inc.'s Microsystem 6/10

On display in Booth S5092 will be Honeywell, Inc.'s first microprocessor-based business computer, the Microsystem 6/10.

The system reportedly is totally compatible with the company's entire line of minicomputers, has extensive networking capabilities and offers a personal computing option as well. It is composed of a 16-bit microprocessor and uses the same operating system and range of applications and communications software as the company's DPS 6 line of minicomputers. It also offers a 16-bit Intel Corp. 8086 processor option that enables it to support the Microsoft, Inc. MS-DOS and Digital Research, Inc.

CP/M 86 operating systems, according to the vendor.

The Microsystem 6/10 consists of a CPU with 128K bytes of random-access memory, two asynchronous ports, a 12-in. monitor and a detached keyboard. One or two 650K-byte diskettes and a 20M-byte Winchester-type fixed disk can be configured with the system, the vendor said. System options include a synchronous communications port, an integrated modem with automatic calling features and up to 512K bytes of main memory.

The product is slated for general availability in June. Prices start at \$3,995, Honeywell said from 200 Smith St., Waltham, Mass. 02154.

SEE US AT NCC BOOTH #5362

We've done it again.

We've one-upped DEC with a fully ergonomic version of our CIT-101.

It tilts. It swivels. It has a large 14-inch screen. The detachable keyboard is pure ergonomics, tilted down to its matted key caps. It's called the CIT-101e.

Actually, it makes us more than two-dozen features up on the DEC VT100 series. Because our new CIT-101e has all the extras included in one terminal that DEC asks you to buy extra terminals to get.

Features like Advanced Video. A bi-directional printer port. Tutorial soft setup mode. Monitor Mode. Window Erase. A graphics expansion card cage for full Tektronix 4010/4014 emulation and 640/240 dot resolution. (This keeps the 101e DEC compatible, but allows you to plug into PLOT 10, DISPLA and other popular graphics packages, which you can't do with a DEC.)

And the list of standard CIT-101e features goes on and on. So you don't have to go on buying DEC after DEC to get all the features you want. You'll find them all in one CIT-101e.

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## Gould, Inc.

Gould, Inc. is expected to unveil a family of computer systems at Booth W6058.

The systems will run the gamut from a small desktop model to a large mainframe, Gould said.

The five modular units are said to be expandable, interconnectable and operable over a local-area network. In addition, the five modular units run under Bell Laboratories' Unix operating system software, according to Gould.

The product family functions in three basic business environments: administration/finance/word and text processing; engineering/design/computer-aided design and manufacturing; and manufacturing/production/distribution, according to Gould.

Pricing on the low end starts at \$5,500.

Further details are available from Gould at 6901 W. Sunrise Blvd., P.O. Box 9148, Fort Lauderdale, Fla. 33310.

## Eastman Kodak Co.

At Booth N3610, Eastman Kodak Co. will exhibit its Kar-4000 information system for the storage and retrieval of computer data and source document images on microfilm.

The system was designed for medium- to high-volume job streams in which users process from 1,000 to 7,000 incoming documents per day and make 25 or more retrievals.

The Kar-4000 system includes electronic access to both on-line data and source documents, multiple application usage and the ability to operate independently either in a stand-alone mode or by accepting data from a central computer in a distributed mode.

The system incorporates a CPU, a printer, custom software and up to eight information consoles, each equipped with a Kodak DMT-150 microimage terminal and a computer terminal.

The system sells for \$70,000. Kodak is located at 343 State St., Rochester, N.Y. 14650.

**AT 11 A.M.  
ON MARCH 2<sup>ND</sup>,  
THE WORLD  
CHANGED.**



(10:59 A.M.)



(11:00 A.M.)

If you decided to buy a computer system before 11 A.M., March 2nd, it was possible to make a purchase decision without fully considering Data General.

But on that date, the world changed.

At 11 A.M., we introduced the most powerful 32-bit virtual supermini ever produced by a computer company. Our ECLIPSE™ MV/10000.

Yet our ECLIPSE MV/10000 is simply the latest of a series of steps we have taken over the last year to make choosing Data General the best business decision you can make.

So now, if you do a comprehensive evaluation of your options — you may be surprised at the results.

**RANGE.** With ECLIPSE MV/10000, we now have the broadest range of computer capability in the business. Which means there's a Data General computer that meets your exact needs. Whatever level of performance you need.

**PRICE.** When you compare any Data General computer with its competition, you will find one of two things. It will either have a similar price and a lot more performance, or it will have similar performance and a lot lower price. Because that's the way we've always made Data General computers.

**COMPATIBILITY.** Unlike our competition, we've gone out of our way to keep our entire line of computers compatible. Which has kept a very important option open for you. In the event your needs ever happen to change, you can take your entire investment in software and peripherals onto larger (or smaller) Data General computers.

**APPLICATION SOFTWARE.** Over this last year, we have signed agreements with major suppliers of software for mechanical, electrical and architectural engineering; medical, process control; financial and decision support applications. Additionally, the MV/10000 forms the base of a powerful integrated office automation system.

**SUPPORT.** Since our customers are looking to us not simply for computers, but for a close working relationship, we're providing the kind of support that requires. Uptime guarantees of up to 99%. A national phone center. Remote diagnostics.

**GRAPHICS.** And since wherever computers are being used, the people working with them are working better with graphics, we've developed (and just introduced) the most advanced graphics workstation ever produced by a minicomputer company.

When you look carefully at where Data General is today — and where the competition is today — the world has changed.

In the past, you may not have fully considered Data General. But as of March 2nd, it will be in your own best interest to look at us very carefully.

For additional information, contact Business Group M.S.F.134; Data General Corporation, 4400 Computer Drive, Westboro, MA 01580.



 Data General

See Us At NCC Booth #B-5174



## Anderson Jacobson, Inc.

Anderson Jacobson, Inc. will be debuting in Booth 55292 its Intel Corp. 8088-based portable computer along with its existing lines of modems and matrix and ink jet printers.

The Executive PC portable unit has 256K bytes of random-access memory; two disk drives, with each handling up to 320K bytes of data; a 7-in. amber screen; and Microsoft, Inc. MS-DOS 2.0 operating system. Base price of the system is \$2,995.

Also on display will be the recently released Series 8 multiple modem system, which consists of the AJ triple modem cards (8480), high-speed AJ 4048 modem (84,595), modem chassis and shelving (\$360), power

supply (\$160), blower fan (\$295) and two sizes of cabinets, 35- and 70-in. high (\$565 and \$725, respectively). Each chassis within the system holds up to eight modems and two power supplies. The system is compatible with Bell 212A and VA 3400 series modems at 1,200 bit/sec and the Bell 103/113 modems at 300 bit/sec. Operating at 4,800 bit/sec, the system communicates over a two-wire switched network.

The AJ 1259-AD autodial/autoanswer triple modem also will be exhibited. The device is compatible with the Bell 212A and VA 3400 series of modems at 1,200 bit/sec and the Bell 103/113 modem at 300 bit/sec.

sec. Purchase price of the device, which can store up to 10 numbers, is \$875 with the monthly leasing cost

set at \$60.

The vendor can be reached at 521 Charcot Ave., San Jose, Calif. 95131

## Nixdorf Computer Corp.

Nixdorf Computer Corp. will be demonstrating its distributed data processing systems and two new versions of its Distributed Processing Executive (DPEX) operating system software here in Booth W6100.

The 600 series systems provide data entry, data processing and data communications capabilities

and the ability to handle up to 32 concurrent tasks.

The DPEX II and DPEX III are said to provide enhanced data entry, data management and Editor programming language features. Pricing on the operating system software starts at \$3,500, the vendor said from 300 Third Ave., Waltham, Mass. 02154.

## Gimix, Inc.

In Booths P7946 and P7948, Gimix, Inc. will be showcasing its GMX III 6809 system, featuring a newly developed CPU board, its OS-9 GMX III multiuser, multitasking operating system and an intelligent I/O board.

The system hardware includes 256K bytes of static random-access memory, a 40M-byte unformatted 5 1/4-in. Winchester hard disk, a 1M-byte unformatted 5 1/4-in. floppy disk and three RS-232C ports, according to a vendor spokesman.

The base price for a three-user network system is \$9,990.89, the spokesman said. Gimix is headquartered at 1337 W. 37th Place, Chicago, Ill. 60609.

## Telefile Computer Products, Inc.

At Booth W6234, Telefile Computer Products, Inc. will be showing its newly announced T85LVM 32-bit superminicomputer, designed to operate on specialized versions of systems software used on the now-defunct Xerox Corp. Sigma line of mainframe processors.

The T85LVM is a virtual memory version of the firm's earlier T85 processor, offered as an upgrade for users of Sigma series products. Now, the vendor says it is offering the T85LVM as a general-purpose superminicomputer.

The system uses Telefile's TCP-V/LVM operating system, which the vendor calls a "genuinely enhanced" version of Xerox's CP-V operating system.

The Telefile system can support up to 16M bytes of virtual memory, using 32M bytes of physical memory with up to 12 access ports and four memory banks. Binary, floating-point, logical or decimal data operations can be performed in a 64-bit, 32-bit, 16-bit or 8-bit address space, the vendor said.

The T85LVM costs \$238,500, the vendor said from 17131 Deimier St., Irvine, Calif. 92714.

## WORD-11 for DEC.

**If we put all our users end to end, they'd reach from Mexico to Berlin.\***

That's how popular our word processing system is. Approximately 26 miles of satisfied users, with more being added every day.

What makes WORD-11<sup>®</sup> so popular? Many things.

It's a powerful, highly responsive word processing system that is versatile in its applications, yet simple to learn and use. It runs on the DEC<sup>™</sup> family of minicomputers and inexpensive terminals. It can handle the largest and most complex distributed word processing applications. And WORD-11 is cost-effective for a few users or 100 users—whether it's used as a dedicated word processing system, or concurrently with data processing.

WORD-11 is available for a wide family of DEC operating systems, including RSTS/E<sup>™</sup>, RSX<sup>™</sup> and VAX/VMS<sup>™</sup>. In addition, it's acquired a proven record of effectiveness and dependability at over 1200 installations.

Above all, WORD-11 is very

easy to use. Unlike other systems, there are no escape sequences or control characters that need to be memorized. All commands are displayed on the screen or on the keyboard. And if you're currently using DECWORD<sup>™</sup> or DEC-MATE<sup>™</sup>, there's no new training necessary to begin using WORD-11. What could be simpler?

For more information, call or write to us at DPD. We'll be happy to tell you more about WORD-11.

The most popular word processing system for DEC users the world over.

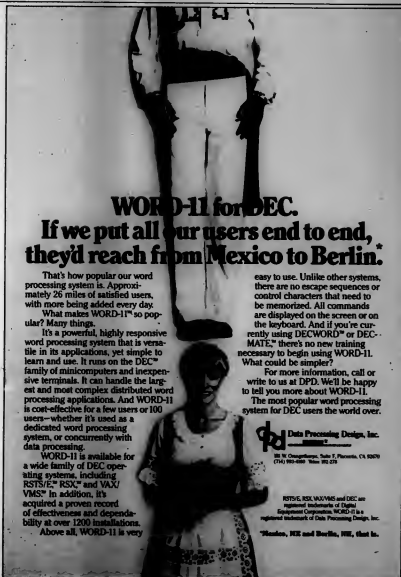


Data Processing Design, Inc.

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\*Mexico, ME and Berlin, ME, that is.



## Wang Laboratories, Inc.

Wang Laboratories, Inc. will be showing its line of small business systems and superminicomputers at Booth N3926.

On display will be the firm's VS 25 and VS 45 distributed office systems. The VS 25 can support up to 10 workstations with up to 512K bytes of main memory and 68M bytes of disk storage. The larger VS 45 can support up to 20 workstations with 1M byte of main memory and more than 2.5G bytes of disk storage. The VS 25 starts at \$21,000, and the VS 45 starts at \$25,000, Wang said.

Also on display will be Wang's 2200 series of processors, including the entry-level SVP system, which

offers between 32K bytes and 128K bytes of main memory, and the top-of-the-line MVP and LVP systems, which support up to 12 users, 512K bytes of fixed memory and up to 32M bytes of disk storage. The 2200 series of processors costs from \$8,000 to about \$25,000, the vendor said.

Wang's VS 100 32-bit supermini-computer and Wangnet broadband local-area network also will be on display. The VS 100 can support up to 128 users with up to 8M bytes of main memory and up to 10G bytes of disk storage. VS 100 systems cost from \$90,000 to \$100,000. Wangnet can connect Wang VS, QIS and Alliance systems at a transmission rate of

12M bit/sec. Wangnet costs between \$500 and \$1,000 per terminal, Wang said.

Wang also said it will show its Digital Voice Exchange (DVX) system. The DVX system allows the user to receive, create and send voice messages to one or more individuals. A 250-user DVX system costs \$54,000, Wang said, from One Industrial Ave., Lowell, Mass. 01851.

## Micromation, Inc.

Micromation, Inc. will be exhibiting in Booth D400 its Mariner, M/ System and Msystem multiuser microcomputers that are all built around the company's M/Net concept.

The Mariner computer is based around the company's Z-64 board and is capable of supporting up to eight users simultaneously. The M/ System is also based around the Z-64 board, which contains a Zilog, Inc. 280 processor and 64K bytes of random-access memory. The system is standardly configured with floppy and Winchester-type disks, according to the vendor.

The entry-level Msystem can be packaged with either the Digital Research, Inc. CP/M or MP/M operating systems or with the vendor's Dbox operating system, which is a CP/M-compatible system containing an embedded data base management system.

The fully configured Msystem is priced at \$6,990, with the basic versions of Mariner and M/ System costing \$4,500 and \$3,000, respectively, the firm said, from 1620 Montgomery St., San Francisco, Calif. 94111.

## Wicat Systems, Inc.

Wicat Systems, Inc. will be showing its line of microcomputers at Booth D2200.

On display will be the newly announced System 160 (S-160). Based on the Motorola, Inc. 68000 microprocessor, S-160 can support from one to 12 users providing from 512K bytes to 4.5M bytes of random-access memory (RAM) and provide support for up to four 5¼-in. disk drives with tape cartridge backup.

S-160 is an intermediate configuration between the firm's entry-level S-500, which supports up to six users, and the top-of-the-line S-200, a rack-mountable system with an intelligent I/O capability. S-200 can support up to 32 users. S-160 starts at \$15,000, the firm said.

S-200, also based on the Motorola 68000 microprocessor, features 512K bytes to 5M bytes of RAM and supports up to 474M bytes of disk storage. Up to four disk drives per controller are supported, and the system can support multiple disk subsystems. S-200 configurations cost from \$26,000. The vendor can be reached through P.O. Box 539, 1875 S. State, Orem, Utah. 84057.

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DELTAK Microsystems

A DELTA MICROSYSTEMS COMPANY







Data General's Eclipse MV/10000

## Momentum Computer Systems International

Momentum Computer Systems International will be exhibiting its series of 32-bit microcomputers in Booth D200. The exhibition includes the company's new bundled system, made up of the vendor's 32-bit minicomputer and the Horizon word-processing and spreadsheet software.

The series includes Momentum 32, which has 1M byte of internal memory and a proprietary, no-wait-state memory management unit. Momentum 32 runs under Bell Laboratories' Unix operating system and comes with several language compilers. It is priced at \$11,950. Momentum 32 contains 512K bytes of memory, a direct memory access controller and an optional interface

for high-capacity drives. It lists for \$13,250. Momentum 32/4 features dual Motorola, Inc. 68000 processors, along with a 3.5-in. Winchester cartridge drive. It costs \$9,995.

The systems are available in either desktop or rack-mounted versions, the company said from 965 W. Maude Ave., Sunnyvale, Calif. 94086.

## Intel Corp.

In Booth N3910, Intel Corp. will exhibit two new products along with its existing product line.

The two new products are the Xenix 286 operating system and an integrated instrumentation and in-circuit emulator.

## Data General Corp.

Data General Corp. will be showing its line of superminicomputers and small business systems at Booth S5174.

On display will be the firm's top-of-the-line MV/10000 32-bit processor that features a maximum main memory of 16M bytes, an on-line storage capacity of 18.5G bytes and dual I/O ports. The system is compatible with DGC's existing 16-bit and 32-bit systems and can be configured with the firm's Comprehensive Electronic Office (CEO) line of software and peripherals. The base price for MV/10000 systems range from \$154,000 to \$243,000. In a CEO configuration, a 100-workstation system

costs about \$4,900 per workstation, the vendor said.

Also on display will be the firm's GW/4000 Expert workstation, which is based on DGC's MV/4000 processor. The system will be on display to demonstrate mechanical design and engineering analysis applications. The GW/4000 costs between \$68,300 and \$86,400, DG said.

Other items on display will include DGC's CS Series 200 small business system, which costs between \$25,000 and \$75,000, and the Dasher G500 color terminal. The G500 terminal costs \$9,500, the vendor said from 4400 Computer Drive, Westboro, Mass. 01586.

## Floating Point Systems, Inc.

Floating Point Systems, Inc. (FPS) will be displaying its line of array processors in Booth N3916.

Software application programs that run on the FPS-164 high-precision 64-bit attached processor will also reportedly be featured at the structural analysis, electronic circuit design and oil-reservoir simulation, the vendor said.

Pricing on the FPS-164 attached

processing computer system starts at \$216,000.

Other FPS products to be exhibited will be 38-bit array processors, including the FPS-100, the AP-1208, the AP-180V and the AP-190L processors. Prices begin at \$40,500, according to the vendor.

FPS can be reached through P.O. Box 23469, Portland, Ore. 97223.

## Formation, Inc.

Formation, Inc. will be demonstrating its Failsoft and Remote Diagnostic Capabilities of its F/4000 32-bit information system in Booth P7112-P7116.

The F/4000 is compatible with the IBM 370 and incorporates redundant features that limit system downtime to roughly five minutes if a component fails, the spokesman for the vendor explained.

The complete F/4000 system starts at \$71,500. Formation is based at 823 E. Gate Drive, Mount Laurel, N.J. 08054.

## The 3270-A B Generic Terminal System



**Compatible** Plug-compatible IBM® 3270 and simultaneous ASC® capability in the same CRT via separate communication ports.

Two terminals in one!

**Functional** Available as a standalone (3270/3276\*), a small cluster (3276/3278\*), and a large cluster (3274/3278\*).

Color terminals (3279\*) also available in standalone and cluster models.

**Affordable** Our large cluster controller is priced below \$3K and 3270 terminals under \$2K. Attach an ASCII printer to each CRT for economical addressable 3287\* capability.

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## Overworked? Not these DOS/VS(E) and CICS/VS labor savers!

Our program products help your systems people do more work with less effort, at a cost that's surprisingly lower than competitive methods. Use them alone or in combination.

**POWERPOOL** retrieves batch prints from POWER/VS queue and prints on 3270-type terminal printers.

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**MANAGEMENT** edits and submits jobs on-line.

**TEXTTEXT** creates formatted documents from free-form input.

**MANCHPDS** compresses 3270 transmissions reducing response time.

New products are under development for release soon. We also offer experienced systems programming consultation nationwide, with bases in Minneapolis and Washington D.C.

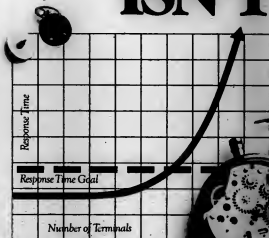
All BSI products come with a 30-day free trial, so you can see just how much labor the programs really save — without any financial risk. Full documentation is also available on request.

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Intel's FAST-3825 relieves the aggravation, of degradation.

Intel's FAST-3825 Semiconductor Disk Memory System. (Fast Access Semiconductor Technique.)

The fastest, most cost-efficient way to page and swap. Helping to free-up the main-frame from heavy on-line applications. So you can add even more users.

Allowing you to get the most out of your system. By maximizing the speed, capacity and investment of your CPU.

How fast is FAST? Typically, 20% faster than anything else. With a .4 msec access time. A 10-15% increase in system throughput. A 25-50% improvement in terminal response time. And a speed of 500 pages a second, at 3.0 to 4.0mb/second.

That's FAST.

But what makes FAST really good and fast is its flexible storage capacity. Up to 144mb. Plus that it's compatible with IBM, Burroughs, AMDAHL and NAS systems. And that FAST can be used with your present system and migrated to your next generation CPU.

Just a few more FAST thoughts. You'll be getting greater reliability, serviceability and lower cost of use. Because FAST has no moving parts. FAST is self-healing. Self-diagnostics find most problems before they can develop. Our service is fast, too. And being FAST doesn't mean you'll be wasting energy.

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Call us, toll-free. (800) 538-1876. In California, (800) 672-1833. Or write us. Lit. Dept. K-8, 3065 Bowers Avenue, Santa Clara, CA 95051.

If your system looks like it's starting to slow, you'd better do something FAST.

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# Peripherals

## Dataproducts Corp.

Dataproducts Corp. will show its line of daisywheel, matrix and band printers at Booth N3938.

Included in the display will be the firm's DP-35 and DP-35 daisywheel printers, which offer letter-quality printing speeds of 35 and 5 char./sec. respectively. The units cost \$1,995 and \$2,495, a spokesman for the vendor said.

The M-Series of matrix printers

will also be on display. The units can print at between 200 and 340 char./sec and cost from \$2,715 to \$3,015, the vendor said.

The firm's medium-speed band printers are available with print speeds of 300, 600, 1,000, 1,500 and 2,000 line/min. The units cost between \$6,822 and \$26,700, the vendor said.

Also on display will be the firm's

M-100L, an intelligent printer that can generate labels, bar codes, block letters, graphics line drawings and text in any combination without programming. The unit costs \$4,233, the vendor said.

The vendor also will show its

Prism printer series from Integral Data Systems, Inc. The units offer switch-selectable print speeds of 110 to 200 char./sec and cost from \$799 to \$1,499, the vendor said from 6200 Canoga Ave., Woodland Hills, Calif. 91365.



Dataproducts' M-100 Label Printer

## Distributed Logic Corp.

Distributed Logic Corp. will be exhibiting its Dilog DU132 tape coupler that provides users of Digital Equipment Corp.'s PDP-11/34 through PDP-11/70 minicomputers and users of VAX-11/750, 780 and 782 computers with both streaming tape and start/stop disk backup at Booth A3313.

The coupler permits data transfer rates of up to 600K byte/sec., with tape speeds of up to 125 in./sec. In start/stop mode, the device is completely compatible with DEC's VMS, RSTS/E and RT-11 operating systems.

The unit features automatic self-

diagnostic routines that check the microprocessor, sequence all data paths and buffer without interfering with the Unibus.

The DU132 reportedly can be used with either 1/2-in. start/stop formatted nine-track tape transports made by most major manufacturers or streaming transports with embedded formatters from Cipher Data Products, Inc., Control Data Corp., Kennedy Co. and System Engineering Labs.

Single-quantity price of the DU132 is \$2,850, the company said from 12800 Garden Blvd., Garden Grove, Calif. 92643.

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## Facit, Inc.

A multipurpose intelligent printer from the Facit/Datavoy Division of Facit, Inc. will bow in Booth N3538. The Model 4570 is said to store a variety of character sets and formats and to handle neatly all types of paper so that it can be matched to task requirements.

Up to 16 combinations of pitch and linguistic variants reportedly can be extracted from the basic eight-char. sets, which can be stored in the printer. The printer operates at 250 char./sec. single-pass. It costs \$3,295 from 235 Main Dunstable Road, Nashua, N.H. 03061.



Facit, Inc.'s Model 4570

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## Shugart Associates, Inc.

Shugart Associates, Inc. will demonstrate a 3½-in. microfloppy disk drive, a series of half-height 5¼-in. Winchester drives and a series of custom large-scale integration controllers in Booth N3856.

The single-sided SA300 microfloppy is said to occupy about one-fourth the volume of a standard minifloppy and to provide 500K bytes of unformatted capacity, 135 track/in. density and 8-msec track-to-track access time. The SA300 costs under \$200.

The half-height disk drives allow designers to place two units in the space of one. The units are said to be interface-compatible with standard 5¼-in. rigid disk drives. The SA706, offering 6.67M bytes of unformatted capacity on one platter, costs under \$550 in OEM quantities, and the SA712, with 13.3M bytes of unformatted capacity on two platters, costs under \$650. Single-unit prices are pending.

The SA1600 series of intelligent controllers is said to handle distributed arbitration, overlapped seeks and a message system, freeing the host CPU for greater I/O capability. The SA1601, for 8-in. Winchester drives, costs \$340 for models on a par with the current SA1600 series and \$380 for the full-performance model.

The SA1610, which handles 5¼-in. Winchester, costs \$300 for SA1600 models

and \$340 for the full-performance model. The SA1620 for 5¼-in. floppy/rigid combinations, costs \$390 and \$430, and the SA1603, for 8-

in. floppy/rigid combinations, costs \$430 and \$470 from the vendor at 475 Oakmead Pkwy., Sunnyvale, Calif. 94086.

## GNT Automatic, Inc.

GNT Automatic, Inc. will exhibit a tape reader/punch station, a rack-mounted tape punch station and a tape editing machine — all for numerical control applications — at Booth N4107.

The desktop Model 4604 tape reader/punch station performs punching and reading simultaneously or independently. The unit features a microprocessor-controlled interface with buffer memory allowing conversion of codes between Ascii and Eia. Featuring an RS-232C interface with transfer rates from 110 to 4,500 bit/sec, the unit costs \$2,595.

The Model 3606 tape punch station, featuring a switch-selectable power supply of 115 Vac or 230 Vac, operates at transfer rates of 50 to 1,200 bit/sec. The unit costs from \$2,220 to \$2,595, depending on capabilities.

The Editmaster tape editing machine and programming station incorporates an Intel Corp. 8085 microprocessor, 32K bytes of read-only memory and 32K bytes of random-access memory.

The 22-lb. unit features a keyboard, a 24-line/min printer with 40-char./line, display, reader and punch. Transfer rates are programmable from 110 to 9,600 bit/sec. The price is \$2,995 from 1560 Trape Road, Waltham, Mass. 02154.

## NEC Home Electronics U.S.A., Inc.

NEC Home Electronics U.S.A., Inc. will show a wide-carriage 120-char./sec dot matrix printer at Booth D300.

The Personal Computer 8025A features 136 columns, bidirectional printing, a 2K-byte buffer for printing and typing simultaneously, tractor and friction feed, standard parallel Centronics Data Computer Corp. interface and serial option.

The unit costs \$975. The firm is located at 1401 Estes Ave., Elk Grove Village, Ill. 60007.

## Priam Corp.

Priam Corp. will present 8-in. and 14-in. disk drives and a series of intelligent interfaces at Booth N4808.

For 8-in. Winchester disk drives, Priam will show the 35M-byte Model 3450, priced at \$3,500; the 70M-byte Model 7050, for \$4,400; and the 105M-byte Model 804, priced at \$5,600, according to the vendor.

In the 14-in. category, the firm will display the 34M-byte Model 3350, costing \$3,450; the 68M-byte Model 6650, for \$4,000; and the 158M-byte Model 15450, costing \$6,200.

Among the intelligent interfaces will be the Smart-T, which reportedly can control up to four Winchester and two backup devices, the vendor said.

Pricing has not been set on the Smart-T, a spokesman said from 3096 Orchard Drive, San Jose, Calif. 95134.

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California Computer Products Model 84 Desktop Plotter

## Calif. Computer Products

California Computer Products, Inc. (Calcomp), in Booth N3838, will be displaying its newly devised line of low-cost desktop plotters that is said to produce high-resolution charts, graphs and drawings on paper or on overhead transparency film.

The Model 84 plots up to 10 colors and plugs into any micro, mini or mainframe computer using any of three interfaces, a spokesman for Calcomp said.

It can print with liquid ink, nylon tip or ceramicon-tipped pens, according to the demands of the appli-

cation, according to the vendor spokesman.

The product is priced at \$1,995, the vendor said.

Calcomp is located at 2411 W. La Palma Ave., Anaheim, Calif. 92801.

## Archive Corp.

Archive Corp. will be exhibiting its Sidewinder series of 1/4-in. streaming cartridge tape drives in Booth D215 at the demands of the appli-

Both the 20M-byte Sidewinder and the 45M-byte Super Sidewinder are offered in an 8-in. form factor. The 20M-byte Scorpion is packaged in the 5 1/4-in. form factor, the vendor said.

In quantity, the Sidewinder is priced at \$995, the Super Sidewinder at \$1,295 and the Scorpion at \$995, the company said.

Archive Corp. is located at 3540 Cadillac Ave., Costa Mesa, Calif. 92626.

## Orange Micro

Orange Micro, Inc. will introduce its Buffer Grappler+ printer interface and other products in Booths P7734-P7738.

The interface reportedly features an expandable printer memory and is said to be compatible with Apple Computer, Inc.'s Apple II, II+, IIe and III computers.

The Buffer Grappler product incorporates 23 different printing features and a 16K-byte upgradable buffer. Memory expansion is achieved on the product with the addition of memory chips.

The memory features of the Buffer Grappler are controlled by an on-board micro.

It costs \$239, from 1400 N. Lakeview Ave., Anaheim, Calif. 92807.

## Century Data Systems

Century Data Systems will unveil its 513M-byte, 14-in. Winchester disk drive in Booth 95210.

Designated the Advanced Markman Series (AMS) 513, the Storage Module Disk (SMD)-compatible drive racked three high is said to allow over 1 1/2G bytes of storage capacity in one 36-in.-high cabinet. The AMS 513 three-rack cabinet option will be displayed here and is also available in a two-rack cabinet option. It includes a basic drive, power supply, desktop enclosure and selectable dual access as a standard feature.

The AMS 513 currently is available with a guaranteed 98% out-of-

box acceptance rate, the vendor said. The AMS 513 disk drives are priced at \$6,600 for OEM quantities of 200 orders or more. Significant discounts are available for larger orders.

The vendor also will demonstrate the AMS 315, a 315M-byte SMD plug-compatible, 14-in. Winchester disk drive. The AMS 315 two-rack packaging option also will be shown, demonstrating 630M bytes of storage capacity. It costs \$5,200 in quantities of 200. In conjunction with the AMS 315, Century's Trident T306 300M-byte removable pack drive will be represented.

The vendor is at 1270 N. Kraemer Blvd., Anaheim, Calif. 92806.



AMS 513 Disk Drive

## Data Systems Design

In Booths P7023-P7029, Data Systems Design (DSD) will exhibit its multibus-compatible 5 1/4-in. floppy/ Winchester Stackpack module for systems integrators, and its DSD 5217 multifunction board which allows file-oriented transfers and image backup using a QIC 02-compatible 1/4-in. streaming tape.

The module can be used as a stor-

age subsystem with a DSD multibus controller. The DSD 5217 handles two ST506-type 5 1/4-in. Winchester, two SA460-type 5 1/4-in. floppy disk drives and a 1/4-in. tape drive.

Pricing for the floppy/ Winchester module begin at \$3,895; the X217 family costs \$1,020 each in quantities of 100, from the vendor at 2241 Lundy Ave., San Jose, Calif. 95131.



Stackpack Module



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## Aviv Corp.

Aviv Corp. will be showing in Booth D208 four disk controllers for use with Digital Equipment Corp.'s Unibus, Q-Bus-based and VAX-11/750 computers, as well as its entire line of single-board magnetic tape controllers for DEC and Data General Corp. equipment.

The Model DFC 807 and DFC 907 controllers, which emulate DEC's RM03/05 and RK06/07 operating systems, provide 151/11/23 users with transparency to all DEC and Unix operating systems. Emulating the RM03/05 and RK06 operating systems, the DFC 607 controllers allow communication with the VAX-11/750-CMI.

The vendor's line of single-board magnetic tape controllers also interface with all DEC Unibus and Q-Bus-based systems as well as with DG's Nova and Eclipse minicomputers, a spokesman said.

The disk controllers are being displayed publicly for the first time, the company said from 26 Cummings Park, Woburn, Mass. 01801.

## Centronics Data Computer Corp.

Centronics Data Computer Corp. will exhibit its line of printers in Booth N3600.

Along with the company's existing line of printers and print stations, two new products will be displayed: the 350 series' 358 print station and automatic sheet and envelope feeder, and the Line Writer Series 400 line printer, the vendor said.

The price of the print stations for end users ranges from \$2,195 to \$3,150. The OEM price for the dot matrix printers (not available to end users) ranges from \$795 to \$995. The OEM price for the E-Series Model III band line printer is \$17,550; the Series 400 line printer costs \$4,850, the vendor said.

Centronics is located at One Wall St., Hudson, N.H. 03051.

## Ex-Cell-O Corp.

At Booth W6395, attendees will be able to view two half-height 54-in. flexible disk drives from Ex-Cell-O Corp.'s Remex Division.

The Slimline RFD 485 and RFD 965 double-sided drives are said to feature self-centering clutch and spindle design and are Anal-compatible.

The RFD 485 features 48 track/in. and a 5-msec track-to-track access time, while the RFD 965 is said to have 96 track/in. and a 3-msec track-to-track access time, according to the vendor.

The RFD 485 costs \$295 and the RFD 965 costs \$360 from the firm at 1733 Alton St., Irvine, Calif. 92714.

## Printronix, Inc.

Printronix, Inc. will exhibit its six printers, including two new models, at Booth W6188. New products include the high-resolution Model 4160 matrix line printer/plotter and a floor model of the 600 line/min P-

600 matrix impact line printer.

The 150 line/min P-150, the 300 line/min P-300 and the 600 line/min P-600 feature expandable 96-char. ASCII sets and full plotting and graphics capability. The P-150 costs

\$4,695; the P-300 costs \$5,595; and the P-600 costs \$7,495.

The MVP is a matrix impact line printer that offers operator- and computer-selectable speeds of 80-, 150- and 200 line/min, depending on application. The unit costs \$3,745.

The Model 4160 is said to combine small dot size and large dot overlap, making it useful for high resolution, graphics, precision industrial bar code labels and business forms and printing. The unit costs \$5,830.

The P-600 floor model cabinet reportedly features 55 dba acoustic noise. No price has been set on the product. The vendor's address is P.O. Box 19559, Irvine, Calif. 92713.

## Kennedy Co.

A seven-track cartridge transport from Kennedy Co. will make its debut in Booth N3616. The Model 6470 is said to employ fixed heads to reduce mechanical complexity while improving read and write data reliability.

The unit is said to have a format-

ted capacity of 40M bytes with 450-ft tape-length cartridges or 50M bytes with a 600-ft tape-length cartridge. Time to transfer 40M bytes reportedly is 16 minutes.

The transport costs \$2,000 with formatter from 1600 Shamrock Ave., Monrovia, Calif. 91016.



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Qwint 780 Series Teleprinter

## Qwint Systems, Inc.

Qwint Systems, Inc. will display its 780 series of teleprinters including receive-only, keyboard send-receive and memory send-receive models for portable or desktop applications in Booths P7354-P7360.

The Digital Equipment Corp.-compatible units are said to feature 120 char./sec speeds.

They are reportedly keyboard or downline configurable for all standard communications protocols and can include a built-in keyboard and autodial, autoanswer modem for direct connection to direct-distance dial, TWX, telex or international tel.

Electronic mail and graphics fea-

tures are included. Standard interfaces include EIA, CCITT V.24 and direct current loop.

Prices range from \$795 to \$2,295 from 3693 Commercial Ave., Northbrook, Ill. 60062.

## Micro Technology, Inc.

Micro Technology, Inc. will be displaying a 22-bit, LSI-11-compatible floppy disk controller as well as their first fully compatible 5¼-in. Digital Equipment Corp. subsystem in Booths D2005-D2007.

The 22-bit, MAXV22 controller, priced at \$990, accommodates up to four disk drives and up to 1M bytes of formatted data per drive.

The 5¼-in. MD4000, which is modeled after its predecessor, the 8-in. MD3000, enables users to select the capacity, quantity and mix of floppy or Winchester disk drives that best satisfies a particular system's requirements.

The price range of the MD4000 is \$3,500 to \$7,000, depending on the configuration chosen, the company said, from 1620 Miraloma Ave., Placentia, Calif. 92670.

## Data Printer Corp.

Data Printer Corp. will be showing its line of band printers at Booth N3748.

On display will be a redesigned version of the firm's 2,000 line/min band printer. The unit is said to feature improved print quality, diagnostic routines and improved paper handling. The printer can be used with 48-, 64- or 96-char. sets and costs \$18,000.

Also on display will be the firm's 3001 series of band printers. The units offer print speeds between 600 and 1,200 line/min and use a 64-char. band. The 3001 series costs between \$8,000 and \$15,000 from 99 Middlesex St., Malden, Mass. 02148.

## Raymond Engineering

Raymond Engineering, Inc. will be showing its line of tape drives at Booths N4105 and N4106.

Included in the display will be the firm's Series WR-100 streaming tape drive, a digital cassette recorder with a 10M-byte formatted capacity. The unit can be used as a direct replacement for a standard 5¼-in. floppy disk drive.

The unit costs \$500, the vendor said.

Also on display will be an intelligent interface option for the WR-100. The microprocessor-based controller, two WR-100 drives and interconnecting cables cost \$1,495, the vendor said from 217 Smith St., Middletown, Conn. 06457.

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## Panasonic

Panasonic will display at Booth N3556 its line of data processing peripherals, including printers, plotters and data collection systems.

Among the products will be:

- VP-6801P color plotter for business graphics (\$1,995)

- CT-160 dual-mode 10-in. color computer display (\$400).

- TR120M4P high-resolution monochrome display (\$220).

- Data Collection System family for recordkeeping, security monitoring and job reporting as well as inventory control applications (\$1,500)

to \$2,400).

Panasonic is located at One Panasonic Way, Secaucus, N.J. 07094.

## Emulex Corp.

In Booth A3100, Emulex Corp. will introduce a line of high-performance, mass-storage subsystems providing combined disk and tape capability in a 42-in. cabinet. Called the FK551, the subsystem line unites Emulex's Digital Equipment Corp.-compatible disk and tape controllers with Fujitsu Ltd.'s M2351A Eagle disk drive and Control Data Corp.'s 92181 Keystone tape drive. The sub-

Data Specialties, Inc. will be displaying its Zebra Demand Printer at Booth N3714.

systems are available for the DEC VAX-11/730, 750 and 780.

The company will also display the CS11/F and CS21/F multiplexers for the VAX-11, which add DEC's DMF-32 communications controller capability to Emulex's CS11 and CS21 multiplexers, priced from \$35,000.

The company can be reached at P.O. Box 6725, 3545 Harbor Blvd., Costa Mesa, Calif. 92626.

The Zebra Demand Printer reportedly prints and dispenses labels, tickets and tags. The high-speed, impact dot matrix printer is called the Zebra because of its bar code printing capability; the vendor said. The Zebra also produces alphanumeric characters and optical character recognition.

The RS-232C interface allows the Zebra to be connected to CRTs, microcomputers and large mainframe systems, the vendor noted. The Zebra Demand Printer is available immediately and priced from \$3,470. Further information can be obtained from the vendor at 3455 Commercial Ave., Northbrook, Ill. 60062.

## Printacolor Corp.

The TC-1040 color ink-jet printer from Printacolor Corp., said to produce more than 4,900 different hues on standard bond paper of various widths, will be the attraction at Booth F7934.

The TC-1040 features user-loadable lookup tables for specifying colors. The unit prints horizontally at either 85 dot/in. or 120 dot/in. and vertically at 45 dot/in.

Paper width is variable from 5.5 in. to 15.75 in. by an adjustable pin-fed mechanism, according to the vendor.

Print speed is said to average 108 raster in./sec.

The unit interfaces via either an RS-232 or Centronics Data Computer Corp.-type I/O port.

The TC-1040 costs \$6,995 from 5965 Peachtree Corners E., Norcross, Ga. 30071.

## Measurement Systems, Inc.

Measurement Systems, Inc. will be exhibiting its line of trackball products, hand controls and joysticks at Booth N4214.

The Model 636 Trackball reportedly provides a third output proportional to the theta or rotational motion in addition to the usual X and Y components of ball motion.

The Model 531 Joystick, a two-axis, potentiometer-type stick, has been expanded to include an environmental boot seal and conductive potentiometers with plastic center taps, according to a vendor spokesman.

The new 404 series of multitaxis, force-operated hand controls, also available with a choice of six different handgrip configurations, features four primary axes that center expanded to 10 proportional outputs, the vendor spokesman said.

The hand controls range in price from \$4,000 to \$12,000 each.

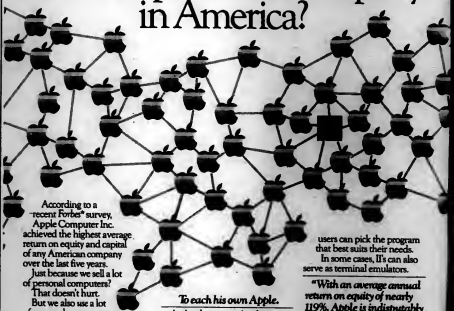
The joystick ranges from \$300 to \$800.

The trackball ranges from \$2,000 to \$3,900, said the vendor spokesman.

Measurement Systems, Inc. is located at 121 Water St., Norwalk, Conn. 06854.

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Here, we'll explore how this system works. And how companies like yours can make the transition to personal computers smoothly and successfully. No theories or fantasies. Just facts, from our own fruitful experience.

## To each his own Apple.

At Apple, we put Apples on every desk. The nature of the work determines the nature of the Apple. We found Apple II's (and now



Apple comes to you with nationwide on-site service and support.

Apple II's) to be the most

affordable solution for most of our

dedicated, ready-to-run

applications.

And because they run more software than any other personal computer,

users can pick the program that best suits their needs.

In some cases, it's can also serve as terminal emulators.

"With an average annual return on equity of nearly 119%, Apple is indisputably number one..." - Forbes

Apple II's, with even more memory and processing capability, offer us important standalone virtues. Including an impressive choice of powerful management tools—from word processing to presentation graphics.

The II's can also serve as a sophisticated terminal emulator (Apple's new Protocol Converter can handle most 3270 series terminals, so any Apple can communicate with mainframes—in our case, an IBM 4341-2.)

## Key Tronic Corp.

Booth W6270 will be the site for Key Tronic Corp.'s unveiling of four keyboard products.

An optical mouse, voice input and optical character recognition options will be offered as data entry devices will be integrated with the firm's keyboard-based data entry system.

Also demonstrated will be the capability to package complete terminal electronics within a custom keyboard. As an example, the firm will demonstrate an enclosed low-profile keyboard that reportedly offers Digital Equipment Corp. VT100 compatibility.

All four options can add up to \$800 to the price of a custom key-

board. The keyboards are priced from \$270 to \$300 from the firm at P.O. Box 14687, Spokane, Wash. 99214.

## Memorex Corp.

In Booth S5492, Memorex Corp. will exhibit its disk and tape drives, display stations and color display station with graphics. The firm will also be showing a number of its printer products and controllers, as well as its flexible disk media, computer tape products and rigid disk drives.

The price of the 3680 disk drive is

The TDX Peripherals Division of GAW Control Corp. will be displaying its TDX 1/4-in. magnetic tape

drive at Booth P7334.

The TDX 1/4-in. tape operates at 75 in./sec. and is fully IBM- and ANSI-compatible. Features include a floating shuttle tape buffer and micro-computer-based embedded formatters for each recording format. The units cost for \$4,700, the vendor said.

TDX Peripherals is located at 1448 New York Ave., Halesite, N.Y. 11743.

## Canon U.S.A., Inc.



Canon U.S.A.'s Color Ink Jet Printer

Canon U.S.A., Inc. will be exhibiting its recently developed Color Ink Jet Printer here in Booth P7625.

This product, designated Model A-1210, uses paper and a large capacity dual-cassette ink supply for printing in seven colors, according to the vendor.

It produces 40 standard and enlarged char./sec. 640 dot/line resolution color printing, image printing and also boasts hard-copy functions, the vendor said.

The Canon printer costs \$795, the vendor said from One Canon Plaza, Lake Success, N.Y. 11042.

## Wintek Corp.

Wintek Corp. will be showing its newly announced, single-board microcomputer based on the Motorola Corp. 6809 microprocessor at Booth S5029.

Called the 6809 Control Module, the unit was designed for a variety of applications including dedicated control, protocol conversion, instrumentation, communications and robotics, the firm said.

The 6809 Control Unit costs from \$245, the vendor said from 1801 South St., Lafayette, Ind. 47904.

## Alpha Data, Inc.

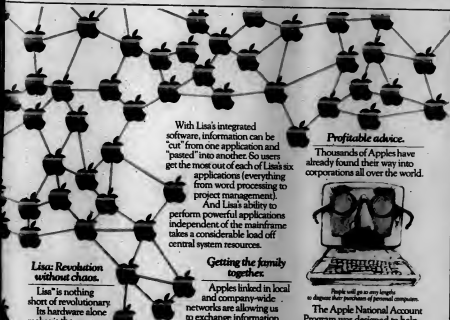
Alpha Data, Inc. will show its 128M-byte disk drive and M/Corve nonvolatile memory at Booth S5031.

The company's 14-in. disk drive features 18-msec average access time and 1M-byte cylinders, according to the vendor.

The M/Corve memory is designed for use in harsh environments and can be configured in 256K-byte increments, the vendor said.

The disk drive is priced at \$8,500 and M/Corve at \$17,923 per 1M-byte, the vendor said.

Alpha Data is located at 20730 Marlin St., Chatsworth, Calif. 91311.



### Lisa: Revolution without chaos.

Lisa<sup>®</sup> is nothing short of revolutionary. Its hardware alone makes it the most powerful personal computer available (see below). But the real story is how quickly Lisa puts that power in your hands.

Because Lisa replaces complex computer commands with familiar symbols and a "mouse" pointer, learning time is reduced from over 20 hours to under 30 minutes.

With Lisa's integrated software, information can be "cut" from one application and "pasted" into another. So users get the most out of each of Lisa's six applications (everything from word processing to project management). And Lisa's ability to perform powerful applications independent of the mainframe takes a considerable load off central system resources.

### Getting the family together.

Apples linked in local and company-wide networks are allowing us to exchange information between PCs, and access corporate mainframes.

Soon, IIs, IIIs and Lisas will be on AppleNet. Designed especially for Apples, this cost-efficient local area network will also interface to other LANs.

For long-haul communications, any Apple can communicate with any other personal computer or mainframe over standard phone lines.

For example: Our distribution centers can enter customer orders and sales data into our DEC or IBM computers, transfer it over public networks, consolidate it on our headquarters mainframe, and make it available to any of Apple's Apples (with proper security clearance) first thing every morning.

### Profitable advice.

Thousands of Apples have already found their way into corporations all over the world.



Apple will go as any length to dispense their purchases of personal computers.

The Apple National Account Program was designed to help you make the best use of these Apples, tailor future purchases to your needs, and coordinate shipments and service.

We offer a variety of support services, including nationwide on-site service (in conjunction with RCA Service Company). And a toll-free support line.

Plus on-site training and a host of self-teaching tutorials. So, no matter how large your company, Apple has all the elements necessary to improve your information systems management.

And to help you profit from our experience.



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virtual emulation and unattended  
programming. Runs more business  
applications than any other PC.

**LISA**  
128K memory, 32/16 in. MC68000  
Microprocessor. Revolutionary user  
interface with integrated applications  
software enhances installation,  
operation and maintenance.

\*Forbes 28th Annual Report on American Industry Jan. 3, 1983. Note: The same survey also found Apple to be number one in sales and profit growth. For information regarding corporate purchases through our National Account Program call (800) 538-9096. Or write Apple Computer Inc., MIS/EDP Marketing Dept., 30525 Mission Ave., Cupertino, CA 95014. ©1983 Apple Computer Inc.



# Honeywell announces help for companies besieged by an army of personal computers.

"Overrun."

"Invaded."

"Swamped."

DP managers use a variety of terms to describe the arrival of so many different personal computers on the business scene. But the feeling is always the same.

After all, most managers have spent years developing well-controlled information systems. Now, almost overnight, they are losing control.

And while there's no arguing that PCs are valuable tools for individual productivity, everyone would prefer a more integrated approach for the company.

What's needed is a system that combines corporate data base capability with the personal computer capabilities employees now insist upon. A system with the capacity to extend the functionality of the corporate network to the individual local level. This is exactly what Honeywell has built.

#### The microSystem 6/10.

The cost-efficient microSystem 6/10 is a multi-personality workstation that provides an impressive range of functions—including networking.

Besides personal computing, the system handles data processing and word processing. It can function as a network end-point and a terminal emulator. What's more, power and flexibility make the microSystem 6/10 perfect for adaptation to industry-specific applications.

The microSystem 6/10 ensures organizational unity through excellent communications—it talks to IBM mainframes as readily as to our own.

It also offers expandable hardware and our time-proven GCOS operating system, which is compatible across the entire range of Honeywell minicomputer products, including even the most powerful 32-bit systems. This compatibility assures easy progress along your growth path by eliminating the need to recreate applications and retrain personnel.

#### Fight fire with fire.

Best of all, perhaps, the microSystem 6/10 will be an immediate hit with employees wed to their PCs. Because it accepts popular software packages based on CP/M-86\* and MS/DOS\*, chances are your people won't have to give up their favorite programs.

#### The microSystem 6/10.

Here's the way to win the battle against "PC Pandemonium." And the war for control.

For more information, call 800-343-6294 (within the 617 area, call 895-7572) or write to the Honeywell Inquiry Center, 200 Smith Street (MS 440), Waltham, Massachusetts 02154.



Together, we can find the answers.

## Honeywell

Come and see the new microSystem 6/10 at NCC.

CP/M-86 is a registered trademark of Digital Research, Inc. MS/DOS is a registered trademark of Micro Soft, Inc.

## Computer Power Systems Corp.



Micropower II

Computer Power Systems Corp. will be demonstrating its newly developed power distribution peripheral for small- to large-scale computer systems in Booths W6011-W6015.

Called System III, the product is said to provide flexibility in creating an approved power structure for computers. It is built to keep the computer performing at maximum efficiency at all times, with a status panel and audio alarms that continually monitor certain parameters of the computer power structure, the vendor explained.

Pricing on the System III ranges from \$5,000 to \$18,000, depending on configuration.

Also on display will be the vendor's power conditioner for mini-computers and small business sys-

tems, called Micropower II. This product provides the user with voltage regulation and isolation features, the vendor said. It costs between \$1,800 and \$3,800.

Finally, the vendor will be showcasing its Line Trac II voltage stabilizer, priced from \$6,500 to \$13,500.

and an isolation transformer for medium- to large-size computer systems called Iso-Max, priced from \$1,100 to \$3,500.

For further details, Computer Power Systems can be reached through P.O. Box 6240, Carson, Calif. 90747.

## Topaz, Inc.

Topaz, Inc. will be introducing three power systems at Booths N3539-N3543.

The Topaz Electronics Division (TED) will unveil the Powermaker Micro uninterruptible power system, said to be a standby power system

designed to protect small business computers against blackouts, voltage sags and power-line noise. Available in 50Hz and 60Hz models and in power ratings of 400VA and 800VA, prices start from \$695.

TED will also introduce Line2, a three-phase power conditioner designed to protect computers and peripherals against power-line noise and voltage variations. Available in 50Hz or 60Hz operation and in power ratings from 10 kVA to 30 kVA, prices range from \$7,350.

The Maximum Value Powercenter (MVP) will be introduced as well. It is said to be a computer room power distribution system designed to meet or exceed all standard industry specifications. MVP is available in power ratings of 100-, 125- and 150 kVA. Prices start at approximately \$12,000, the vendor said, through P.O. Box 8117, 3855 Ruffin Road, San Diego, Calif. 92123.

## Dymarc Industries, Inc.

Dymarc Industries, Inc. will show its line of voltage regulators at Booths P7158-P7160.

The line includes Clipstrip and Clipstrip II — six-outlet transient voltage protected strips — which can dissipate up to 5,000 transient/sec. The units come with a master on/off switch and have a resettable circuit breaker. The units cost \$124.50.

Also on display will be the firm's T-25 Clipper, a transient voltage suppressor for RS-232 data transmission lines. The device was designed to protect against transients and surges which might enter the RS-232 interface of an unprotected host system. The unit can protect between two and five lines and costs between \$135 and \$299, the vendor said.

Also, the firm will be showing the Clip-Cube, a load regulator conditioner. The units are rated at better than 95% efficiency and are available in power ratings ranging from 750VA to 1,500VA. The Clip-Cube costs between \$433 and \$795, the vendor said from 9 E. 38th St., New York, N.Y. 10016.

## Superior Electric Co.

Superior Electric Co. will be at Booths N4606-N4604 demonstrating a new model of its Stabiline AC Voltage Monitor.

The monitor features a detachable detector module that allows monitoring of single- or three-phase power lines. For three-phase applications, the system monitors all phases, and different sag, surge, low-average, high-average and impulse levels can be set for each channel. The system can monitor 120V, 208-240V or 480V ac power lines and can also check dc power sources up to 10V. Thresholds for each channel can be set independently, so 120V, 240V and 480V sin-

gle-phase lines can be monitored simultaneously, the vendor claimed.

The system consists of the company's Remotector detector module and a microprocessor-based printer/controller module. Threshold limits, calendar and clock settings and the monitor identification number can be entered with push-button keys. The Remotector unit can be left at a site to perform its monitoring functions.

A complete system costs \$5,900 with each additional detector module priced at \$2,900 from Superior Electric, based at 383 Middle St., Bristol, Conn. 06010.

## Sola Electric

Sola Electric will be demonstrating its new 5 kVA, uninterruptible power system (UPS) that uses solid-state design said to offer higher efficiency, tighter regulation, near-unity input power factor and reduced input current distortion. The UPS will be on display in Booths N3559-N3565.

The unit provides conditioned ac power, including isolation from noise and transients, as well as reserve battery backup during total line failure, a spokesman said.

An internal solid-state bypass transfer automatically switches the load directly to the utility power line when load demands exceed system overload capacity of 200% for 167 msec. The system is said to maintain phase match between UPS output and bypass line to assure "no-break" transfer. Normal operation is automatically restored with correction of overload condition.

The UPS is available in a 60Hz

model with 1/0 at 120 Vac, single-phase two-wire; 120V/240 Vac, split single-phase three-wire; or 208 Vac, single-phase two-wire. Cost of the unit is \$14,000 from 1717 Dunne Road, Elk Grove Village, Ill. 60007.

## Cyberex, Inc.

Cyberex, Inc. will unveil an information system for uninterruptible power systems in Booths N4501-N4503.

Called Advanced Information System for EDP Managers (Advise), the system is said to provide comprehensive information on the electric power supply for data center operations.

It offers both visual and optional hard-copy information on system status and can display voltage, current and frequency readings, the

## Atlas Energy Systems

Atlas Energy Systems in Booth W6592 will display its recently announced MPC Powerpod that combines the features of a rotary power conditioner and power distribution system.

Taking up a 34- by 36-in. area, the system's synchronous motor provides a constant frequency of within  $\pm 1\%$  despite changes in load. The system can absorb prolonged voltage sags and surges up to  $\pm 40\%$  in addition to providing 250 msec of power continuity ride-through in the event of a total power failure. The Powerpod also features a separate single-point ground which eliminates the need for an isolation transformer.

The product is available in sizes ranging from 10- to 75 kVA with prices starting at \$10,000, the vendor said from 9457 Rush St., South El Monte, Calif. 91733.

vendor said. Advise ranges in price from \$5,000 to \$25,000, depending upon options.

Cyberex will also be showcasing its newly developed Transistorized Uninterruptible Power System, which promises efficiency and reliability along with fast response time to power fluctuations. Pricing is not yet available, according to a vendor spokesman. Cyberex is located at 717 Industrial Park Blvd., Mentor, Ohio 44060.

## Franklin Electric Co.

Franklin Electric Co. will be displaying in Booth #B126a a line of power line disturbance monitors (PLDM), solid-state power frequency converters, uninterruptible power systems (UPS) and other products for use in power conversion applications.

PLDMs are designed to detect disturbances that exceed sensitivity thresholds, classify them by type, magnitude and duration and tell the user where they occurred. They detect transients, undervoltages, overvoltages, transient direction and polarity, transient duration, frequency errors and power line anomalies.

The Model 3500 laboratory-quality PLDM automatically monitors sin-

gle- and three-phase ac power lines with nominal voltages from 50 to 600 Vac. The Model 3600A portable programmed PLDM incorporates dual microprocessors and solid-state memory to provide line monitoring in a flexible environment. It can simultaneously monitor three 50- to 800 Vac channels and provide summed, three-phase analysis of an individual line disturbance.

The 400 series frequency converters convert three-phase 50Hz input

to 60Hz input and 400Hz output to 415Hz output, the company claimed. They are designed for use with large mainframes.

The System 475 is a solid-state frequency converter designed to replace 400Hz, 75 kVA rotary generators. Systems 475 and 4125 can be programmed to output 400-, 415- or 441Hz and can be run in parallel.

The 600 series UPS provide three-phase 50- or 60Hz input and output in all standard power distribution

voltages. They are useful as building blocks for higher rated or redundant systems. The UPS provide an alternative source of power in the event of utility power failure.

The Model 3500 PLDM costs \$4,500, the Model 3600A costs \$5,800. The System 475 frequency converter costs \$42,000 and the 600 series UPS costs \$53,000 from the firm's Programmed Power Division, 995 Benicia Ave., Sunnyvale, Calif. 94086.

## Shape Magnetronics, Inc.

Shape Magnetronics, Inc. will introduce a compact 10 kVA Line Tamer ferro-resonant transformer and

### LaMarche, Inc.

In Booth 5560, LaMarche, Inc. will be showing a new line of uninterruptible power systems designed for rack, desktop or wall mounting.

The units reportedly require 80% less space than the company's previous models.

Designed for laboratories, offices and production areas, the LaMarche AS2CP series supplies continuous, disturbance-free power regardless of the condition of the ac line, the vendor said.

The units utilize complementary metal oxide semiconductor (CMOS) logic and sine-weighted pulse width modulation. They are equipped with electronic output voltage regulation, quartz time base, 120% current limit and power walk-in, according to a vendor spokesman.

A 500W system costs \$2,500, the vendor said from 106 Bradrock Drive, Des Plaines, Ill. 60018.

will exhibit the rest of its Line Tamer line in Booth P7809.

The Model CLT-1001-CSO 10 kVA Line Tamer regulating transformer reportedly takes up less than two sq ft of floor space and has I/O voltage of 120V, 208V and 240V, said to be ideal for 208V single-phase disk drives. Single-unit price lists at \$3,295, according to a vendor spokesman.

Other line-regulating transformers are available with ratings from 70VA through 2,000VA, the vendor said. Both 50Hz and 60Hz single-phase models are available. Prices range from \$186 for a 70VA unit to \$1,007 for a 2,000VA unit, the vendor said from 901 DuPage Ave., Lombard, Ill. 60148.

## C&D Batteries

C&D Batteries, an Allied Corp. company, will show its line of ALCW/LCW lead-cadmium batteries in Booth D1405.

The batteries reportedly feature two-hole posts with copper inserts for greater conductivity, better con-

tact and greater safety. Covers are flame retardant.

Available in seven- to 49-pole models, each of these batteries ranges in price from \$200 to \$1,200, the vendor said from 3043 Walton Road, Plymouth Meeting, Pa. 19462.

The Model 626-RMU-1 costs \$1,500 and the Model 626-RMU-3 costs \$2,000, the vendor said from 1000 New Durham Road, Edison, N.J. 08817.

## COMBOARD/HASP the high throughput DEC/IBM interconnect

Your high volume data transfers to IBM or CDC centrals are achieved quickly by the COMBOARD 1231 because it supports transfer rates to 56,000 bps over private or leased networks.

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## Sperry Corp.

Sperry Corp. will display its Sperrylink office system and its application generator called the Mapper System at Booth S5462.

Sperrylink is an integrated office system featuring word processing, electronic spreadsheet, networking and electronic mail. The system is designed for medium-size and large organizations, the vendor said.

Sperry's Mapper System is said to allow non-data-processing professionals to manipulate, extract and analyze their information more easily, the vendor said. The system allows the manager to create programs for budget planning, sales analysis, inventory control, production scheduling and other applications.

The basic price for a 64-user Sperrylink system is between \$505,000 and \$670,000. Mapper's price is approximately \$978/mo.

More information is available from Sperry through P.O. Box 500, Blue Bell, Pa. 19424.



Sperry Corp.'s Mapper System

## Codex Corp.

Codex Corp. will demonstrate two new products in its line of communicating office desktop computers at Booth S5050.

CDX-268 Models 25 and 45 are designed for multitier applications in distributed office networks. Based on an operating system similar to Bell Laboratories' Unix, the multitier software includes record management and word processing capabilities. Cobol and Basic languages and communications facilities.

The desktop computer reportedly

offer more disk storage space than comparable systems, including the IBM Personal Computer and Apple Computer, Inc.'s Lisa microcomputer.

The Model 25 comes with two 650K-byte diskette drives. The Model 45 has one diskette and 15M-byte Winchester drive. Prices range from \$4,500 to \$9,000, depending on the configuration.

Further information can be obtained from the vendor at 20 Cabot Blvd., Mansfield, Mass. 02048.

## Harris Corp.

Harris Corp. will display its 9000 series office systems product line at Booth S5062.

The Harris 9000 is a family of office systems ranging from stand-alone to clustered configurations that provide integrated word processing, personal computing and communications capabilities. Data processing is provided via network connections with other Harris products, a vendor spokesman said.

Prices for the Harris 9000 range from \$9,500, for a stand-alone system with printer, to \$84,000, for a cluster system consisting of eight workstations and four printers. More information is available from Harris Corp., Information Systems Sector, Melbourne, Fla. 32919.



Harris Corp.'s 9000 Series

## Four Phase Systems, Inc.

Four Phase Systems, Inc., at Booth S5392, will be showing its Series 5000 line of computers designed for office automation and distributed processing applications.

The 5000 series features broad-band local-area networking, support for up to 128 of the firm's Fastrak intelligent workstations, up to 6M bytes of main memory, up to 2.2G bytes of disk storage and up to 16 loadable character sets. The processors can accommodate communications of up to 50K bit/sec and employ a high-speed direct memory access architecture, the vendor said.

A base System 700 with 25 display terminals, 1.5M bytes of main memory, 138M bytes of disk storage and communications controller costs \$218,605, the vendor said from 10700 N. De Anza Blvd., Cupertino, Calif. 95014.

## Computer Consoles, Inc.

Computer Consoles, Inc. will demonstrate a number of new features and major enhancements for its Officepower integrated office system at Booth N4900. Demonstrations of Officepower and Power S/20 will take place.

The latest version of Officepower, Release 2, is said to be a multifunctional Bell Laboratories' Unix-based office automation system.

New features reportedly include a comprehensive applications package designed to create and handle user-defined forms, automatic spelling verification and intersystem mail capabilities.

Other new provisions in Release 2 are special calendar graphic, list processing, automatic paragraph and section numbering and electronic spreadsheet. The following Officepower features were upgraded for Release 2: permissions, support for IBM 6670, records operations, reminders, telephone messaging, word processing and printing.

Computer Consoles will also exhibit other products from its Officepower lines including Intersystem Mail, CCI 4920 and 4921 letter-quality printers, Supercomp-Twenty business planning software package, Spelling Checker, User Defined Applications Package and Power S/20, a family of systems.

Prices for Officepower products begin at \$30,000; prices for Power S/20 begin at \$19,600; and prices for Power S/35 begin at \$162,600, a spokeswoman said. Computer Consoles is located at 97 Humboldt St., Rochester, N.Y. 14609.

## Now you can add 31 IBM 3270 devices without adding 29 miles of cable.

Our CMX Cable Multiplexer takes up to 32 inputs from an IBM 3274 Controller, combines them into a single signal, in a single cable, for demultiplexing up to 1500 meters away. With no performance degradation. So using an existing cable, you could add as many as 31 new terminals without pulling any new cable at all: at 1500 meters each, that's 29 miles of cable you don't need to find room for, install or manage.

Installation is easy using existing RG-4 A/U coaxial cable and BNC connectors. It's especially easy when you consider the alternative—pulling miles of new cable through already-crowded ducts.

Up to four cables can be run from the CMX, so you can support 3278, 3279 and 3287 devices on different floors, or in different

directions, from one unit.

The CMX Cable Multiplexer system is available in 32-port, 24-port, 16-port and 8-port models. It is completely transparent to IBM user software and terminal operation and meets all type A interface and cabling specifications.

Please call the regional office nearest you for more information about the CMX system: Santa Clara, CA, (408) 496-6464; Burlington, MA, (617) 273-5858; St. Louis, MO, (314) 634-1024; Dallas, TX, (214) 385-7090; Los Angeles, CA, (714) 353-1771; Edison, NJ, (201) 225-5225; McLean, VA, (703) 448-1117.

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The Net/One Company



## Plastic Reel Corp.

Plastic Reel Corp. of America (PRC) will introduce six containers for software shipping and storage as the latest additions to its Data Vault line, which will be exhibited in its entirety at Booth S5017.

Three of these Data Vault containers were designed specifically for disk packs and cartridges:

- DV3-40-25, which reportedly accommodates one 12-platter pack or two IBM 5440 disk cartridges or two IBM 2315 disk cartridges.

- DV3-67-25, which was designed to hold either one five-platter disk pack or one Digital Equipment Corp. RK06/RK07 disk cartridge.

- DV6-67-25, which holds two five-platter disk packs or two RK06 disk cartridges or two RK07 disk cartridges.

A new generation of three Data

Vault multiple-unit shipping cases to accommodate reels in tape reels, canisters or PRC's Easy Load II tape seals will also be featured:

- DV8-06-01, which holds 12 600-ft reels in tape seals or eight reels in canisters or Easy Load II tape seals.

- DV8-12-01, said to hold 12 1,200-ft reels in tape seals or eight reels in canisters or Easy Load II tape seals.

- DV-8-24-01, which accommodates 12 2,400-ft reels in tape seals or eight reels in canisters or Easy Load II tape seals.

Suggested retail for all shipping cases and containers is \$196, with the exception of DV3-67-25, which has a suggested list price of \$78, a spokesman said.

PRC of America is located at 475 Blvd., Elmwood Park, N.J. 07007.

## Wright Line, Inc.

Wright Line, Inc., a unit of Barry Wright Corp., will display its line of cabinets, filing and work surfaces for managing information media in automated offices at Booth N4816.

Featured will be Wright Line's ETS 2000 workstations, which the

## Zax Corp.

Zax Corp. will feature its entire line of microprocessor development tools in Booths D1304 and D1305. The firm also will show its new ICD-178/8086-88 emulator and the Box microprocessor.

The Zax Model ICD-178 in-circuit emulator for the 8086 and 8088 also emulates the 8087 coprocessor for each chip. The emulator is priced at \$7,995.

The Z80-based Box microprocessor can be switched from an 8-bit to a 16-bit microprocessor and features double 8-in. double-density, double-sided floppy disks and RS-232 ports.

The microprocessor is priced at \$3,495. Zax is located at 8311 Westminster Ave., Westminster, Calif. 92663.

## Schlegel Corp.

In Booths P7859 and P7861, Schlegel Corp. will exhibit a variety of systems and components, including electromagnetic interference shielding and a CRT antiglare screen. The firm will also exhibit its urethane cleaning blades, passive static dissipaters and keyboard membranes.

The shielding is priced at 46 cents per linear foot; the antiglare screens are \$4 to \$10 each; the passive static dissipaters start at \$1.18 each; conductive rubber extrusion is 28 cents

per linear foot; and urethane cleaning blades start at \$3.50 each. Cleaning brushes start at \$3.75 each; keyboard membranes start at \$1.79 each; tungsten rods start at 15 cents each; tungsten wire is 8 cents per meter; and filtration components are \$2 each. Pricing varies according to design, quantity and specification, a spokesman said.

The company is located at 360 E. Avenue, Box 23113, Rochester, N.Y. 14692.

Other ergonomic safety features include wiring ports and channels for cable management and adjustable leveling feet to compensate for uneven floors. Pricing for the ETS 2000 workstations starts at \$556, the vendor said.

Docu-Mate filing devices and Docu-Dex indexing labels also will be displayed, along with Wright Line's Optimedia Cabinets. Docu-Mate is a center-hook filing method, consisting of binders, cartridges and folders. It starts at \$3.

Docu-Dex is an indexing system for use with Docu-Mate devices. A starter kit is available for \$39. Optimedia Cabinets are available at a variety of prices.

The vendor is located at 160 Gold Star Blvd., Worcester, Mass. 01606.

per linear foot; and urethane cleaning blades start at \$3.50 each.

Cleaning brushes start at \$3.75 each; keyboard membranes start at \$1.79 each; tungsten rods start at 15 cents each; tungsten wire is 8 cents per meter; and filtration components are \$2 each. Pricing varies according to design, quantity and specification, a spokesman said.

The company is located at 360 E. Avenue, Box 23113, Rochester, N.Y. 14692.

## Liebert Corp.

Liebert Corp. will introduce its uninterruptible power supply systems and a new generation of environmental control systems at Booth N3668.

The firm also will exhibit its full product line, which includes Mini Center, Precision Power Center, Power Management Center and other products designed to support small to large computer systems.

Liebert's programmed power centers, called DataTec, reportedly extend the existing Liebert power protection systems line and aid users who require total power protection calling for backup capabilities in the event of power outages. Prices range from \$20,000 to \$80,000 installed, the

vendor said.

The Liebert Environmental Control System's microprocessor-driven control functions permit a programmable environment for any data center. The system also provides monitoring capabilities for complete information on the total data center — both environmental and control system parameters.

Datatec prices range from \$5,000 to \$25,000 installed, the vendor said through P.O. Box 29186, 1050 Dearborn Drive, Columbus, Ohio 43229.

## Datocode Systems

The Graphic Laminating Division of Datocode Systems will be displaying in Booth P7144 its Data-Entry ID badge 7144 that can be magnetically encoded, embossed, bar-coded and optically keypunch-coded to be read by data-input equipment made by all manufacturers.

The ID badge has a single-layer, high-density magnetic strip deeply etched to minimize reading errors caused by weak signals. Code information is automatically transferred into the strip with 4,000 strands of energy. The code cannot be erased or altered by a common magnet, but the inner surface of the laminate can be impregnated with a security seal; and photographs can be recessed in the layers of laminates to prevent tampering.

The company will supply the equipment for photography, on-site finishing and laminating and badges to meet any user requirement. Price depends on the number of colors chosen as well as several other variables, the vendor said from 1701 E. 12th St., Cleveland, Ohio 44114.

## International Data Corp.

International Data Corp. (IDC) will be displaying its line of services and products at Booths S5043-S5047.

IDC services cover a range of types, including data files; continuous information services, which include research reports, memoranda, newsletters, seminars and conferences; guide series; consulting; multiterminal research; and various publications. The average service price ranges from \$9,000 to \$20,000.

IDC can be reached through Box 955, 5 Speen St., Framingham, Mass. 01701.

## Optical Coating Laboratory, Inc.

Optical Coating Laboratory, Inc. (OCL), at Booth D2415, will be showing its antiglare panel, designed to fit most leading CRT terminals.

Utilizing OCL's newly developed photophobic high-efficiency antireflection (HEA) thin-film coating, Glare/Guard is said to reduce CRT glare by 94%, reportedly minimizing the reflected brightness most sensitive to the eyes. Image-to-background contrast on the CRT is enhanced and a high resolution is maintained, resulting in crisp, sharp images, the vendor said.

Available through authorized dealers nationwide, Glare/Guard lists for \$99, which includes the HEA-coated glass panel and high-impact plastic frame, a 1-oz pump spray bottle of cleaner and a lint-free cleaning cloth. OCL is located at 2279 Northpoint Pkwy., Santa Rosa, Calif. 95401.

## Synsor Corp.

Synsor Corp. will exhibit its study card for use with computer terminals, telephones, interactive video and audio visual components in Booth D1701-2.

The cards feature swing-out end panels for group interaction. They are priced from \$900 to \$1,200 from Synsor Corp., located at 1424 N.E. 280th, Woodinville, Wash. 98072.

# How to recognize what's truly significant in a computing information glut.

Do you sometimes feel that you're on the leading end of the computer revolution? That you're being snowed under by an avalanche of information? That just plowing through all of this information is taking a tremendous bite out of your time? And once you've dug out from under it all, how do you know what's worthwhile?

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(N)

## Data Devices International

Data Devices International will be showing its line of media maintenance products at Booths 4500-4504.

On display will be The Analyzer, a microprocessor-controlled magnetic-tape management system, which costs \$16,570, according to the vendor.

The Mark 500 magnetic-tape cleaner operates at 50 in./sec and can clean a 2,400-ft reel of tape in 1.92 minutes. The unit costs \$8,995, the vendor said.

The firm will also introduce The Minicertifier, a computer tape analyzer which can identify and correct most tape defects, according to the vendor.

The unit costs \$29,995 the vendor said, from 20235 Bahama St. Chatsworth, Calif. 91311.

## Dennison Kybe

Dennison Kybe Corp. will be showing its line of magnetic media products and services at Booths N4100-N4102.

Included in the display will be the firm's MLT-502. The magnetic tape cleans retentions, removes static change and evaluates the condition of 800, 1,600 and 6,250 bit/in. tapes in 4.25 minutes, according to the vendor.

The MLT-502 costs \$12,395, the vendor said from 82 Calvary St., Waltham, Mass. 02254.

## Ring King

In Booths P7144-P7148, Ring King Visibles, Inc. will exhibit its diskette flip file, which reportedly holds 20 diskettes, a locking diskette storage tray with a hinged lid, two handles and interior dividers, a desktop diskette storage tray and portable diskette carrier.

The flip file is priced at \$42.95, the locking tray costs \$24.95, the desktop tray is \$35.95 and the portable carriers list at \$3.25 for 5¼-in. diskettes and \$4.95 for 8-in. diskettes, the vendor said.

The company is located at 215 Second St., Muscatine, Iowa 52601.

## Input-EZ Corp.

Input-EZ Corp. of Denver will exhibit a patented terminal stand, designed to increase operator comfort and productivity at Booths P7406-P7408.

Incorporated in the product's design is the patented Input-EZ ergonomic concept which places the keyboard, a document platform and CRT screen in a straight line at the proper postural and optical relationship in distance and height to the operator, the vendor explained.

The Model M30 terminal stand is priced at \$442, according to the vendor.

Input-EZ is located at 7330 S. Alton Way, Unit E, P.O. Box 3444, Englewood, Colo. 80155.

## Marvel Metal Products

Marvel Metal Products Co. will display a multimedia file and a desktop computer cart in Booth D2132. The file, featuring top access, will

## ACL, Inc.

ACL, Inc. in Booth P7712 will be displaying its line of disposable towielettes which are used to clean equipment and work-station surfaces and eliminate static buildup.

The towielettes are treated with the company's Statidex, a topical antistat intended to eliminate static charges. The towielettes cost less than \$5 for a box of 24, from 1960 E. Devon Ave., Elk Grove Village, Ill. 60007.

store hanging letter and legal-file folders, printouts and magnetic media in any combination, the vendor said.

The two top panels slide open from the center to provide work surfaces on either side of the filing area. The unit costs \$289.

The all-steel Desktop Computer Cart is said to free up the work surface by providing overhead shelf storage.

The cart is available to fit 48-in.-or 60-in.-wide work surfaces. With two book shelves, the unit costs \$200 and with three shelves, \$220.

The vendor is located at 3843 W. 43rd St., Chicago, Ill. 60632.

## Randomex Data Maintenance

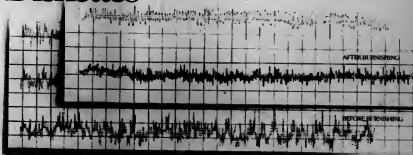
In Booth N4000, Randomex Data Maintenance, Inc. will exhibit its line of automatic inspection and cleaning equipment for removable hard disk packs and cartridges.

Displayed for the first time will be the company's 850 automatic disk cartridge cleaner, which reportedly has the capability of cleaning disk cartridges dating from the original IBM 1130 system to the most recent of cartridges.

The cartridge cleaner is priced at \$3,990 from the firm at 1100 E. Willow St., Signal Hill, Calif. 90806.

DISCOVER THE DYSAN DIFFERENCE

## Advanced Burnishing Makes Dyan Diskettes



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heads actually glide across the surface with optimum head-to-surface interface. That means precise recording, total system reliability, and protection of your floppy investment.

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Before burnishing, the surface of the media contains many microscopic peaks and valleys. Without proper burnishing, these tiny high points can interfere with read/write head interface which cause signal problems, surface abrasion, and debris accumulation. And that means poor system performance.

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Dyan's "hands-off" auto-load certification system allows Dyan to test each and every diskette and eliminates any possibility of handling errors. Also, 100% surface testing both on and between the tracks guaran-



tees that every diskette is error-free. Plus, Dyan's proprietary DY<sup>TM</sup> lubricant provides maximum head-to-surface compliance and prolongs diskette life. You can select from a complete line of premium 8" and 5¼" diskettes, single or double density, certified on one or both sides.

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# Two

Second in a Series

Burnishing

## Wolfe Computer Personnel Testing, Inc.

In Booth W6408, Wolfe Computer Personnel Testing, Inc. will introduce its Dial-A-Skill knowledge series of 30-min tests for evaluating qualified, experienced data processing professionals.

Test modules include structured Cobol, OS JCL (MVS), DOS/VSE JCL, TSO/Structured Programming Family and Structural Analysis and Design Concepts. The fee is \$35 per skill measured, which includes grading and a detailed report.

Wolfe can be reached through Box 319, Oradell, N.J. 07649.

## Amco Engineering Co.

At Booths W6588 and P6590, Amco Engineering Co. will feature its line of shielded electromagnetic interference cabinets and consoles.

The products are designed to assist manufacturers in conforming to recently enacted Federal Communica-

tions Commission regulations on emission control, according to the vendor.

Typical price for a medium-size cabinet is approximately \$900, Amco said from 3801 N. Rose St., Schiller Park, Ill. 60176.

## Identatronics

Identatronics will be showing its All-In-One photo identification system at Booth D2015.

The system is said to provide instant, indestructible photo ID badges that are computer-compatible for data collection, time and attendance and door access control. Badges are

custom-designed to customer specifications and are available in many varieties, according to a spokesman for the vendor.

The All-In-One system ranges in price from \$1,000 to \$1,500, the vendor said from 425 Lively Blvd., Elk Grove Village, Ill. 60007.

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## Pace, Inc.

Pace, Inc. will be exhibiting two soldering/desoldering systems and a benchtop repair system for printed-circuit boards at Booth W6598.

Its Model SX-301 is said to be a self-contained, spike-free, power-soldering/desoldering system that removes components from any assembly, according to a spokesman for the vendor. It costs \$610.

The Pace Micro portable operates on ac and 12 Vdc sources and reportedly provides spike-free MOS operation. It costs \$395.

The PRC-151 benchtop repair system was designed for any rework, repair and modification of printed-circuit boards. It costs \$1,175.

The vendor is headquartered at 9693 Brewers Court, Laurel, Md. 20707.

## Curtis 1000

Curtis 1000 will exhibit a variety of its office products at Booth 55019.

Those products include two personalized mailing alternatives — chain-O-Letter (matched letter-headers) and Envo-Matic (envelopes) or Clean-Cut, a set of continuous forms said to have the appearance of individual sheets, the vendor said.

They include a line of stock and custom data processing labels and lines of magnetic media. Other computer-related supplies range from data binders to expanding and protective mailers and single-strike and multistrike film and a variety of ribbons.

Prices are dependent on quantity ordered, according to the spokesman. The vendor is headquartered at 1000 Curtis Drive S.E., Smyrna, Ga. 30080.

## Jensen Tools, Inc.

In Booth N4908, Jensen Tools, Inc. will feature its tool kit for computer service technicians.

The JTK-78L tool kit reportedly contains the tools necessary to perform troubleshooting and on-site repair at computer installations. It costs \$217, includes standard logic test equipment and comes in a padded zipper case. The vendor is located at 7815 S. 46th St., Phoenix, Ariz. 85040.

## International Memory Products Of California, Inc.

International Memory Products of California, Inc. (IMP) will be demonstrating its new service — disk pack and cartridge refurbishing — at Booth P8108.

A distributor of disk packs, diskettes, magnetic tape and furniture, IMP said it will also rebuild crashed or damaged disk packs and cartridges to meet or exceed industry standards.

The refurbishing process is said to include a step-by-step quality assurance program and a seven-year guarantee against defects in material and workmanship. Prices range from \$50 to \$495, the vendor said.

The vendor is located at 3017 Ocean Park Blvd., Santa Monica, Calif. 90405.

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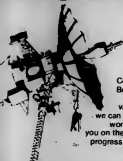
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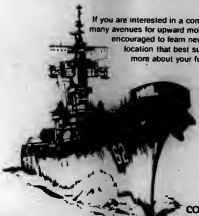


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Engineering Computing Systems, a recently formed business unit, is responsible for the design, development, manufacture and marketing of a complete line of engineering work stations.

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Responsible to plan, organize and direct a high performance CAD workstation application group. This will include the development of overall strategies, programs for evaluating and acquiring application software and direct application software product implementation projects of considerable scope and complexity.

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Will identify engineering applications requirements, develop software application acquisition strategy, identify and qualify software vendors, and extend, modify, port and benchmark applications to run on Tek's line of engineering computing systems.

This position requires experience developing software products in both a lead and individual contributor role, familiarity with requirements analysis and third party software marketplace, knowledge of UNIX\*, CPM, PASCAL, C and FORTRAN and experience proposing and developing product concepts.

#### Senior Software/Hardware Engineer

Provide technical leadership for an integrated set of engineering software products. This responsibility will include setting the technical direction in the areas of their interface, applications integration, the selection/determination of products and functionality for products focused at CAD/EE workstations as well as directing a group of engineers in the implementation of this direction.

This position requires prior experience to the design of user interfaces, a lead role in the design and development of a major software application product, experience with UNIX\* and the ability to focus product requirements across products and markets.

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### SR. SYSTEMS PROGRAMMER/ANALYST

Minimum 2 years' experience in systems programming on Burroughs large systems with datacom networks. User support experience and knowledge of MQL, MCP and DCL/GO, required. Bachelor's degree in Mathematics, Computer Science, Engineering or equivalent required.

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Some companies choose Beehive International's unique TOPPER® terminal for network applications. Others specify it as a superior stand-alone. Either choice leaves both options open.

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Manage software development group responsible for production of computer system software and applications. May coordinate software development with external organizations.

The successful candidate will have a minimum of three years experience in software management, including operating systems and communications. Knowledge of UNIX operating systems preferred.

### Senior Programmer

For this position we require a minimum of three to five years experience and a BSCS degree or equivalent. Combined experience in UNIX or C, Ethernet, SNA, X 25, M8000 assembler language, firmware, hardware, diagnostic programming languages and DBMS is highly desirable.

### Microprocessor Programmers

These senior level positions involve firmware and systems development for all facets of this rapidly growing industry. These positions require experience with 8000 microprocessors, as well as a strong background in communications or terminals. 3-5 years experience with design code software for CRT based products. C-language and UNIX is desirable. Additional experience with firmware operating systems and terminal evaluation packages is strongly recommended. Positions require a BSEE or equivalent experience.

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Significant royalty/income opportunities would develop for those individuals having courses with the potential for broad levels of popularity. We will consider outright purchase of courses in certain subject areas.

To have your course submitted for consideration, please send a detailed course outline, course length, and a resume of your professional background (in confidence).

Reply To: Box CW-84147 COMPUTERWORLD Box 880  
Framingham, MA 01701

## SYSTEMS MANAGER

A healthcare corporation located in the southeast is seeking qualified applicants for the position of Advanced Applications Manager. The successful candidate will have a minimum of a Bachelor's degree in data processing, a strong background in systems analysis, systems management and an applied knowledge and experience in advanced systems development. Must be able to develop new systems and applications in a multi-user facility. Excellent salary and benefits package. Send resume in confidence to:

CW-84147  
Computerworld  
Box 880  
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## International Marketing Manager Hardware Products

Our client is the acknowledged leader in consumer and coin-operated video games and a dynamic force in Home Computer Systems. They seek top, highly promotable consumer marketing professionals to join their International Sales Marketing Group, based in the San Francisco area. International experience (including living or working abroad), and solid knowledge of at least one foreign language are key qualifications for these positions.

### New Products

In this position, you will define, develop, implement and market new products and new product strategies for 1-5 years in the future. You will help develop a long-term strategic view of the Home Computer Systems market that will guide the company's future marketing planning for international markets. This is an important, high visibility position that will involve you in corporate decision making at the highest level. Necessary experience: 5-8 years in consumer electronics product management. MBA required, BSEE highly desirable.

### Existing Products

In this position, you will coordinate ongoing marketing programs to support the sale of existing hardware products including home computers, peripherals and accessories. Your responsibilities will include managing a staff of product managers; managing the product line inventory and sales; determining and maintaining profitability of the line; and making forecasts of future sales. You will be making day-to-day and long-term plans for pricing, promotion, merchandising, distribution, etc. You will work with every aspect of the marketing function, including software marketing, legal, financial and other departments. You'll need 5-8 years product management experience in consumer goods, preferably consumer electronics. You should hold an MBA, a BA in Liberal Arts and have an excellent track record in promoting consumer products.

Both positions are in the \$50-60K range, with excellent benefits including relocation to the San Francisco area.



Please submit your resume with salary history or call John Fitzgerald at 515-365-4444. The Adeler Group, Ltd., a subsidiary of The Adeler Group, Ltd., 10000 University Avenue, Fremont, CA 94538. 916-781-4725.

The Adeler Group provides a full range of human resources management products and services in addition to reserved search and placement activities.

Data Processing

## Systems Products/ Programmers

(Commercial Banking Systems)

Key openings in  
NCR's expanding  
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NCR, a world leader in the information processing industry, seeks strong achievers who can complement our team of marketing and support professionals.

Your credentials must include at least 2-5 years experience in commercial banking systems applications. Familiarity with C/P is desirable. Ideally, exposure to Assembly language and NATG programming are assets. Minimum travel required.

As one of the most respected companies in the field, NCR offers competitive salaries, a comprehensive benefit program and an atmosphere where the challenge, reward and recognition are as great as any opportunity in the business world today.

You should have a technical or business degree with computer science courses. In lieu of a degree, we will consider equivalent experience. If you are successful in your present position and want to expand your potential, forward your resume and salary history to:

Mr. Randy Helms, NCR Corporation  
Dept. 888, USDPO, UMS-1  
Dayton, Ohio 45478.

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## Engineering

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OUR GROWTH,  
OUR STANDARDS  
AND OUR OFFER

Examine the facts. Computer Sciences Corporation is the world's largest information services company. We're growing at a rate of 25% annually. Our Defense Systems Division is setting the standards and creating the prototypes for the industry at large. To add to our growth and standards, CSC has an exceptional offer for Software/Systems Engineers who want to work on a variety of sophisticated and technically challenging projects in a real-time environment. Excellent compensation, and where appropriate, an exceptional "total cover" relocation package.

Engineering professionals who would like to advance their careers should consider the following outstanding opportunities. For immediate and confidential consideration, please call or send your resume to the individual in the location listed below that matches your interest and experience.

## MOORESTOWN, NJ

Call Marlene Levick COLLECT at (609) 234-1100, or forward your resume to her attention at: CSC, Defense Systems Division, P.O. Box N, Moorestown, NJ 08057.

Participate in the development of the world's most advanced ship-board decision-making combat systems, sophisticated simulation/wargaming systems, or state-of-the-art microprocessor technology.

- REAL-TIME SOFTWARE
- SCIENTIFIC APPLICATIONS
- FORTRAN, PL/I, ASSEMBLY, "C", CMS-2
- OPERATING SYSTEMS
- MODELING & SIMULATION
- MICROPROCESSOR APPLICATIONS
- SEL, CP-901, CDC-CYBER

## HUNTSVILLE, AL

Call Betty Campbell COLLECT at (205) 837-7200, or forward your resume to her attention at: CSC, Defense Systems Division, 200 Sparkman Drive NW, Huntsville, AL 35895.

You'll be involved in the design, development, implementation and test to support a high-speed passenger system for the Department of Transportation; or provide the system engineering support in tactical missile systems to include tracking technology, guidance systems, development tests, and instrumentation systems.

- CONTROL SYSTEMS ENGINEERING
- EW SYSTEMS
- SIMULATION & MODELING
- DIGITAL HYBRID & HW-IN-THE-LOOP SIMULATION
- JAL, FORTRAN, ASSEMBLY

## DAHLGREN, VA

Call Dan Hickman COLLECT at (703) 663-9251, or forward your resume to his attention at: CSC, Defense Systems Division, 38 Danube Drive, King George, VA 22485.

Working in conjunction with our Moorestown, NJ facility, opportunities are available for computer professionals with experience in any of the following:

- REAL-TIME SOFTWARE
- CMS-2
- OPERATING SYSTEMS

## RED BANK, NJ

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Participate in the design and development of advanced C\* systems.

- ADA, PASCAL, PL/I, ALGOL
- TACTICAL C\* SYSTEMS ENGINEERING
- MILITARY COMM NETWORKS
- SOFTWARE DESIGN & DEVELOPMENT

All candidates should have a BS degree in Computer Science, Electrical Engineering or a related discipline, and experience in any of the above areas. U.S. Citizenship is required.

**Engineering Professionals...** Contact Arlene Sidney, Personnel Consultant immediately if you will be attending the National Computer Conference the week of May 16th to schedule a personal and local interview—call COLLECT Monday to Friday 9:00AM to 5:00PM (609) 234-1100, Ext. 2358, or call evenings and weekends (609) 778-0794.

If you are unable to call, mail resume or write: A. Sidney, Personnel Consultant, CSC, Defense Systems Division, P.O. Box N, Moorestown, NJ 08057.

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At On-Line Software, you share directly in the success of your work, because you get a "piece of the pie" as part of our very attractive compensation plan. As one of the fastest growing software firms in the industry, OSI has a number of challenging opportunities for very talented product development and support professionals.

In order to qualify, you must have at least 5 years of intensive DP experience, with at least 3 years of CICS, IMS, Systems Programming, or Technical Writing expertise.

Current openings exist in five categories:

### CICS Software Development

- For InterTest, Guardian, and Omnicom:
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- Very heavy IBM Assembler

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- For Datasystems, our new DL/I product:
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- DL/I or either IMS/DC or CICS experience

### Technical & Marketing Support

- Highly articulate with technical sales presentation experience
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- Willing to travel, with 1 or 2 overnight trips per week (no long term trips)

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- For Omnicom and our new line of IBM/PC to mainframe software
- IBM/PC expertise, with heavy "C" language/UNIX
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- Proven ability to write software user manuals
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If you think you're up to the challenge, and want a slice of the rewards at OSI, please send a letter and resume to our Manager of Software Development, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, New Jersey 07024. Or, if you don't have a current resume prepared, call our Manager of Software Development directly at (800) 526-0272 or (201) 592-0009.

All openings are for our Fort Lee office located just over the George Washington Bridge. We are an Equal Opportunity Employer, and all replies will be held in the strictest confidence. No agencies, please.

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SOFTWARE**  
INTERNATIONAL

### ASSEMBLER & ALPHA MICRO PROGRAMMER

2 years experience. Salary \$35,000-50,000. Excellent opportunities. Send resume and references to:

P.O. Box 9829  
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### TECHNICAL SUPPORT REPRESENTATIVES

Individuals with a minimum of 2 years experience in the home or field sales position, offering excellent communication skills, and a proven track record in selling computer products with excellent customer service. Send resume and salary history to: **Infotek**

1101 Shady Road, Building J  
Piscataway, New Jersey 08854  
Attention: Patricia Hunt  
EOE

### TOP SECRET SYSTEMS SECURITY EXPERT

If you are looking for a new career challenge and will accept high security, then you will find this position and our other sales roles with us. We are looking for individuals who are willing to take on the challenge of this position. This position offers a unique blend of technical and sales experience. Send resume and salary history to: **Infotek**

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If you have a good understanding of IBM/PC systems and facilities, and you are a good salesperson, an excellent salary and benefits package awaits you along with career opportunities and more. Please send your resume and salary requirements to:

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Blairtown, NJ 07748

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- DL-I
- VSAM

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### GROUND FLOOR OPPORTUNITY IN INFORMATION ENGINEERING

We have immediate openings. Interesting new product lines, strong market opportunity in a few months. This requires a special kind of person: experience in technical development, a background in consulting, project management, education, and marketing. Send resume and salary history to: **Infotek**

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### COMMUNICATIONS MANAGER

Seeg Technology, Silicon Valley's most progressive semiconductor company, is offering a challenging career in data and voice communication.

This hands on highly visible position requires a communications professional to develop and implement short and long range communication strategies to support the Company's extremely rapid growth.

#### Opportunities include:

- Local area networking/distributed processing
- Integration of voice and data switching
- Communication support of CAD/CAM
- Integration of national and international sales offices
- Distributor network
- New technologies evaluation/vendor interfaces

#### We require:

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- Familiarity with all major networking standards
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- Engineering background with major strengths in data communication
- Formal training with MBA preferred

Join us. Be part of this new, driving force of creativity and development. We offer a comprehensive benefits package, including an equity position.

Forward your resume to Human Resources, Seeg Technology, Inc., 849 Fortune Drive, San Jose, CA 95131. An equal opportunity employer M/F/H/V

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## Programmers/ Programmer Analysts Mini-Computer and/or Tandem Experience

If you are challenged by designing and implementing state-of-the-art mini- and micro-computer systems, the Hertz Corporation in Oklahoma City has outstanding career opportunities for Programmers and Programmer Analysts with on-line application experience.

As our Worldwide Reservation Center, our Systems professionals are designing new applications in support of field operations and reservation center enhancements.

The individuals we seek should have the following qualifications:

- 1-5 years of data processing experience
- Communication experience
- Mini-computer implementation and/or design experience

Call Monday, May 16th from 8AM - 5PM to arrange local interview appointment being scheduled for Tuesday, May 17th or Wednesday, May 18th. (714) 871-8430, 880 Langford Dr., Suite 201, Fullerton, CA.

These positions offer competitive salaries and excellent benefits, including RELOCATION PROGRAM, COMPANY PAID LIFE/ MEDICAL/DENTAL INSURANCE FOR EMPLOYEE AND DEPENDENTS, SAVINGS PROGRAM, RETIREMENT PLAN AND MUCH MORE! If qualified, and unable to attend local interview, please submit your resume and salary history, in strictest confidence, to:

**Hertz**

The Hertz Corporation

ATTN: Ned Otischar  
10401 N. Pennsylvania  
Oklahoma City, OK 73120

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On April 19, 1983, the age of hardware ended. And the age of software began as one vendor source emerged to meet the needs of information management. That source is Cullinet. On that date, four major product announcements clearly established Cullinet as the leader in the software age.

• IDMS/2 - the first commercially available DBMS combining networking and relational capabilities

• A mainframe-based information database for personal computer users

• A database-driven application software system for IBM personal computers

• A joint agreement with Apple Computer to develop software systems that enable their new Lisa to interface with IBM mainframes

Through this revolutionary set of software solutions, it has now become possible to implement workable corporate-wide computer strategies.

To realize the true potential of the software age, we seek additional talented professionals with expertise in the following areas.

# April 19, 1983.

## The beginning of the software age.

### SYSTEMS SOFTWARE DEVELOPMENT

#### SOFTWARE ENGINEERS

##### IDMS Database Development

Opportunity to work on utilities, compilers, and Database recovery systems. Requires a minimum of 3 years' experience with DB Management Systems.

##### Data Dictionary Development

Apply your expertise to data dictionary systems and language compilers. Requires a minimum of 2 years' experience with data dictionary systems and/or database management systems.

##### Applications Development Systems (ADS)

Develop programmer productivity aids, on-line screen mapping services, and code generation techniques. Requires a minimum of 2 years' experience in the development of systems-level software. DB background essential.

##### ESCAPE

Reporting to the development staff, provide customer support by telephone and in the field in the use of our ESCAPE product and assist in the development of product enhancements. Requires several years' experience on IBM mainframes. Specific knowledge of IDMS or CICS would be a plus. Success in this role demands strong interpersonal skills and some user contact. Position involves some travel.

##### Software Maintenance Control Technician

To qualify for this position, you'll need a working knowledge of JCL demonstrating experience using IBM large mainframes, polished technical editorial skills, and well developed written, oral communication and organizational skills.

### APPLICATIONS SOFTWARE DEVELOPMENT

#### SOFTWARE ENGINEERS

Challenging opportunity to develop a fully integrated set of manufacturing and financial products in an on-line database environment. Requires a minimum of 2 years' applications development experience. Database and on-line experience desirable.

##### Financial Systems

Participate in the development of general ledger, accounts payable, purchasing order entry, accounts receivable, all integrated in an IDMS DB/DC environment.

##### Manufacturing Systems

Development of bill of material, inventory control, MRP, shop floor control and master production scheduling. Fully integrated with the financial systems.

##### Corporate MIS

Development of a set of applications built around an integrated corporate database. The MIS Group is in the early stages of providing applications in a rapidly growing and changing environment.

### MICROPROCESSOR SOFTWARE DEVELOPMENT

#### DESIGNERS

Successful candidates must demonstrate an understanding of high level languages such as C, PL/I or Basic and possess significant software development experience with personal computers.

• **Graphics** - Requires a minimum of 2 years experience demonstrating familiarity with personal computer or microprocessor systems graphics.

• **Management Decision Support** - Opportunity for candidate with a minimum of 3 years' experience to assume a senior level project leader role.

For immediate, confidential consideration, submit resume with salary history to C.H. Levy, Cullinet, Dept. CW559, 600 Blue Hill Drive, Westwood, MA 02090.

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## Software Engineering Professionals Nationwide Openings



Raytheon Service Company's Mid-Atlantic Systems Facility has career opportunities for those software engineering professionals desiring mobility, responsibility and growth. Minimum requirements include at least five years of relevant experience and educational background in engineering, math, physics or computer science; degree preferred.

### SYSTEM TYPES

- Surveillance Radar
- Air Traffic Control
- Weather Radar
- Electronic Counter Measures
- AAW Fire Control/Weapons Direction
- Underwater Fire Control/Vertical Launch
- Missile Guidance/Control

### LOCATIONS

- Massachusetts
- Virginia
- New Jersey
- California
- Rhode Island
- Mississippi
- Maryland

### LANGUAGES

- CMS-2
- ULTRA-32
- ULTRA-16
- Ada
- PASCAL
- FORTRAN
- ASSEMBLY
- JOVIAL

### HARDWARE

- ANUYK-7
- ANUYK-20
- PDP-11
- RP-16
- MOD COMP
- IBM 370
- CYBER 174
- M8000
- ANUYK-19
- DEC SYSTEM 10
- ANUYK-43
- ANUYK-44
- I8008
- VAX
- Z8

We offer an excellent, totally company-paid benefits package. Both permanent and per diem assignments are available.

If you feel you qualify for one of these challenging positions, please send your resume to Mr. Gail Foster at the address below. Principals only please.

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### SYSTEMS ANALYSTS

## Tektronix: The Graphics Innovators



There is an upsurge of innovation at Tektronix as we provide creative solutions for a future of change. For instance, our new line of low-cost, high-quality color raster terminals will catapult us even further ahead of the competition. Our just-announced technological breakthroughs in high performance color 4158 terminals and 4091 Color Copier are the new industry standards. These excellent new products complement existing products to form the broadest offering in the industry.

We have career opportunities for

### SYSTEMS ANALYSTS in:

- Dayton, Ohio
- Long Island, N.Y.
- Milford, Conn., & other geog. locations.

With a college degree and extensive FORTRAN, preferably scientific applications orientation, your customer/user interface skills and mini or mainframe experience will be used in a pre- and post-sales and client support environment.

Send your resume with salary expectations TODAY, or call Bob Godden, COLLECT (501) 646-7151, Tektronix, Inc., Dept. CWG-709, Professional Drive, Gaithersburg, MD 20878. An equal opportunity employer M/F/H.

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## Let's Talk Potential

The people at ADR know a lot about potential. Twenty-three years ago ADR was just a good idea waiting to happen.

Today, ADR is the nation's oldest and largest independent systems software company.

The intervening years have brought many innovations. ADR's integrated product line was a concept that revolutionized the industry, while our 4th generation software provided the world with the most efficient, powerful systems ever developed.

Currently, we're looking for individuals who possess a thorough knowledge of IBM Assembly language and a minimum of 3 years programming experience. Software development and support positions are available in our Princeton and Dallas facilities.

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If you would like more information about a technical career with ADR, write Mr. E.D. Smith, Director of Technical Recruiting, APPLIED DATA RESEARCH, INC., Route 206 & Orchard Road, CN-8, Princeton, NJ 08540. An equal opportunity employer.



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System Industries manufactures controllers and distributes disk/tape systems, including 300 Mbytes SMD, 600 Mbyte Winchester drives, and 8250 BPI tape drives. We're in our highest growth mode yet, and that means challenge... for our employees and for your CAREER GROWTH.

We have immediate openings for Field Engineers in Los Angeles, the San Francisco Bay Area, Washington D.C., and Chicago. What's more, we'll be hiring continually in all major metropolitan areas as our growth expands.

Please submit your resume to Jeanne Abbott, Personnel Dept., System Industries, 1866 Barber Lane, P.O. Box 789, Millbrae, CA 94038, or call COLLECT (408) 942-1212.

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National Openings With Client Companies and Through Affiliated Agencies

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Call or send resume or rough notes of objectives, salary history, education, training and experience (including computers, models, operating systems and languages) to either one of our offices. Our client companies pay all our fees. We guide you decide.

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Cherry Hill, New Jersey 08032  
(609) 687-4488

RSVP SERVICES, Dept. C  
Suite 711, Duane Hall  
1777 Duane Hall, Box 801 PA 19227  
(215) 629-0595

From outside New Jersey, call toll-free 800-232-8153

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## FLORIDA

## Director Of Systems And Programming

Challenging position as leader of a large systems and programming staff working on a diversified and interesting set of application areas supporting the service delivery systems of Metro-Dade County. Our environment includes: shared IBM 3081, 3082, and 4341 computers under VAX/VMS, MVS/SPC, JES2, with POP11/70's under RSC/11M. TP network serving over 500 remote users via ACF/NCP, ACF/VTAM, CICS/VS and RJE, DMS and System 2000 data bases.

The minimum requirements for this position are: three years experience managing a systems and programming staff of a medium to large teleprocessing-oriented DP installation. Bachelors Degree in Public Administration, Business Administration, Computer Science, or related subject. Additional experience and formal education is desirable.

Competitive salary range; excellent suburban location and fringe benefits.

Interviews will be conducted the first week of June 1983. Interested applicants should submit a detailed resume postmarked no later than May 23rd to:

Carl Bach Treasurer  
Management Recruitment  
Office of Computer Services  
8880 SW 87th Avenue  
Miami, FL 33173  
(305) 556-5457

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SECURITY ADMINISTRATOR/  
PROJECT LEADER

Will be responsible for developing and implementing a comprehensive disaster recovery plan. Position will report directly to the Manager of Computer Services. Position requires a Bachelor's Degree in Computer Science or equivalent. A minimum of five years experience in DP, 2-3 years in project management and background in Data Security. Programming background preferred.

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Need an individual for rapidly growing T.C. area. Minimum and years experience in telecommunications. Responsible for evaluation and maintenance of terminals and printers. Must be able to interface well with users and vendors.

**SENIOR COMPUTER OPERATOR**  
Operate large scale MVS/JES2 system. Will require minimum of three years experience on large CIB environment. Strong working knowledge of CICS, JCL, and RJE utilized is required as well.

**PRODUCTION SUPPORT ANALYST**  
Responsibilities will include maintenance of production JCL, production libraries, development of CICS, macros and other productivity aids. Requires a minimum of two years experience using QIC/JCL TSO and an in-line programming language, preferably COBOL, PL/I, SAS or PRO-DRUMMER.

Contact: Christian Broadcasting Network, Inc., Personnel Office  
CBN Center, Wyckoff, NJ 07474  
20484. CBN is an EOE. M/F/H.

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PROGRAMMER ANALYSTS

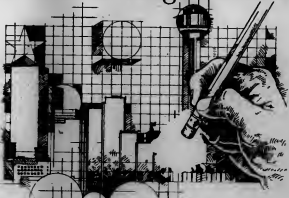
SYSTEMS ANALYSTS

SYSTEMS PROGRAMMERS

DATA BASE ANALYSTS

## Software Engineers.

# Take away the great climate, the professional sports, the arts, the neighborhoods.



## You still have an excellent reason for living in Dallas. E-Systems.

At E-Systems you'll have opportunities that most engineers just dream about—opportunities to work on long-term projects that'll put you on the leading edge of technology in command and control, reconnaissance, and other highly advanced electronics systems.

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There's another plus. E-Systems offers salaries and benefits that compare with the best anywhere.

If joining E-Systems in Dallas means a move, we'll help you with our personalized relocation program. The program even includes dual career assistance.

Right now, E-Systems is looking for people with these qualifications:

## Software Engineers.

—PERKIN-ELMER 3230 or VAX 11/750 computer systems experience preferred. Real-time, software design, development and maintenance.

- Application software
- Communications software
- Operating systems
- Diagnostic software
- Maintenance applications

Includes both assembly and FORTRAN Language Applications. B.S. in EE, Math or Computer Science with 3 or more years experience required. Will also consider recent graduate with a high grade point average and one of the above stated degrees.

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with a B.S. in EE, or Computer Science.

## Software Test Engineers.

—2 to 4 years in software systems testing plus enough software development experience for:

- Definition of test requirements
- Generation of test plans/procedures
- Test execution and reporting

B.S. in Computer Science or Math required.

## Software Operating System Engineers.

—Emphasis on real-time distributed data acquisition/processing systems.

• PERKIN-ELMER 3230

—NETWORKS

—UNIX

—POL/1

• VAX 11/750 to VAX 11/30

—NETWORKS

—DEC/V

—POL

—FORTRAN

—CMS

Should have a minimum of two or more years experience in VAX/VMS or PERKIN-ELMER operating system environments. Also requires a B.S. in EE, Math or Computer Science.

## Systems Programmers.

—Emphasis on large-scale real-time distributed data systems:

• VAX 11/750, POP 11, Hewlett-Packard and Data General Mini-computers interconnected via the 80 megabyte HYPER channel network system.

• Computer system interfaced to hardware devices via an ETHERNET NET-ONE system for

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• ORACLE relational DBMS...  
• ATOM color graphics terminals.

## MIS Professionals.

Senior Specialist.

—Must have ability to lead technical support function in a service oriented, controlled environment. Must be experienced in:

- MVS/JES2 generations and software installations
- VTAM/NCP and data base

Prefer 8 or more years technical experience

## Senior Software Engineers.

—Must have ability to control network configurations to meet service level requirements.

Requires experience in:

- VTAM/NCP, CICS and TSO in an MVS environment
- MVS/JES2 generation

Prefer 4 or more years technical experience.

—Will control all phases of data storage administration in an MVS environment and experience in:

- Data base installation, definition, and maintenance (IDMS or ADABAS)

—Data security (RACE or ACF2)

Prefer 4 plus years technical experience.

For immediate consideration please forward your resume to: Gary Hunt, E-Systems, Inc., Garland Division, P.O. Box 228118, Dept. 41, Dallas, Texas 75286.

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# "Etna works for me."

"I've been a systems programmer for five years. I work hard, and I've always earned my pay. But it wasn't until I came to Etna that I was paid what I'm worth."

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"Sure, I work for Etna. But only because Etna works for me."

If you have 1-5 years' experience, call or send your resume to Mary Scott, (203) 273-3790, Recruiting Office, Etna Life & Casualty, 900 Asylum Avenue, Hartford, CT 06156. An equal opportunity/affirmative action employer.

**Experienced Systems Programmers and Programmer/Analysts wanted now.**

**Etna**



# tek

## Applications Engineers

TEK is an industry leader in RF spectrum analyzers, logic analyzers, and microcomputer development systems as well as test and measurement, and broadcast instrumentation products. Due to our tremendous growth, we now have positions for Applications Engineers in Chicago and Philadelphia for one of our fastest-growing divisions, the COMMUNICATIONS DIVISION.

Qualified applicants should have BSEE or Computer Science degrees or equivalent knowledge. Technical experience in RF spectrum analysis and microwave disciplines is required. Strong GPRB and BASIC programming skills and experience are necessary. Excellent communication skills and the ability to interface effectively with customers is also required.

TEK offers an excellent compensation and benefits package. For immediate consideration, please send your resume to Bonnie Rosoloto, Tektronix, Inc., Dept. CW56, 1551 Corporate Drive, Irving, Texas 75062.

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## Systems Professionals: Talk to AMS Before You Decide!

Considering a career switch? You should know about AMERICAN MANAGEMENT SYSTEMS (AMS). We are an expanding nationwide firm with current annual sales of \$70 million.

Our professional staff, now 650 strong, designs and implements major and sophisticated MIS systems for very large organizations including the top 200 state and local governments, banks, oil and gas firms, colleges and universities, federal agencies... and many others.

Our work involves data base systems, data communications, office automation, and local area networking. AMS professionals have opportunities as:

- Technical Consultants
- Systems Architects
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We have career opportunities for highly-qualified professionals with 5+ years of experience in large MIS projects. We're looking for people with proven track records and the desire to accept challenges and develop leadership roles as Consultants, Technical Specialists or Project Managers.

These openings are in our Washington, D.C., New York City, Denver, and Houston offices. We offer a full range of benefits and salaries of \$40,000, depending on your qualifications. Send your resume in confidence to:

**Ludy P. Baur**  
Director, Office of Professional Resources  
American Management Systems, Inc.  
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## Distribution Center Automation PROGRAMMER/ANALYST

Cincinnati Area

The Gap Stores, Inc., a NYSE listed fashion specialty retailer with over 500 stores nationwide, is currently seeking an experienced Programmer/Analyst in our MIS Department.

A major distribution center expansion and automation effort centered around HP based system development, has just begun. This project will utilize HP3000 and HP-1000 computers linked to laser scanners, in-motion scales, and conveyor control systems. The successful candidate will play a key role in this development effort.

The ideal candidate should have 3 plus years COBOL programming and design experience on HP3000 series computers. MAGE, V3000 and/or HP-1000 experience is a definite plus.

The Gap offers an excellent company benefits package, including competitive salary and relocation assistance. For immediate consideration, please call Gary Mierendorf collect. Monday - Wednesday, 5p-11p between 9:00am-1:00pm, (608) 283-1100, or submit your resume to The Gap, 3434 Minnola Place, Erlanger, KY 41018. An equal opportunity employer m/f/h. Principals only, please.

the **gap**

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## Somehow, Did Your Last Raise Seem Insignificant?



## New, Free Computer Salary Survey!

Learn about compensation in the computer field, including the effects of inflation and recession, and which career paths offer the greatest compensation from a 28-page report prepared by Source EDP.

Despite past inflation and recession, demand for computer systems and the people needed to support them continues to grow.

But which professionals, with what specialized experience and skills, are really in the best positions for long term career and salary growth? And is your salary really keeping pace?

In our new Survey, you'll get answers to these questions and much more.

### Compare your salary with money others.

The new Survey not only provides salary medians for 48 position categories, but it also shows "highs" and "lows" for each one as well. Figures are organized by types of professionals, including those ranging from commercial programmers to management and marketing positions; by experience level; and by size of computer installation site.

So you'll be able to compare your salary with those computer professionals who have similar responsibilities and skills and to learn who in computing, in what kinds of specialized disciplines, are earning the most.

No other Survey we know of is more comprehensive. It's based on contacts with more than 50,000 professionals and 25,000 organizations.

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Most significantly, you'll also need about which specific areas of specialization are forecasted for unusual growth in this decade and beyond. The past year saw many changes in the economy and has altered career prospects for some professionals who were not properly prepared, so the

need to stay abreast of current trends and career planning has never been so critical.

Whether computer specialty you're in, or plan to explore—programming, software, systems design, data communications, mini/micro systems, data base, computer networking, sales, management or others—our Survey can help you make the most of your career.

You'll be able to keep up with changes in the profession, establish career goals, develop action plans, evaluate your progress, spot potential dangers, take corrective action when needed, and in general, keep your career on the best possible course for growth.

### Call for your free copy.

The new 1983 Computer Salary Survey and Career Planning Guide is available without charge. You owe it

to yourself to get a copy of the report—especially if most of your career lies ahead of you.

Call today and our free 28-page Survey will be sent to you in strict confidence, without obligation.



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The world's largest nationwide firm that specializes exclusively in the computer profession.

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Call the office nearest you that is listed to the right if unable to call, write:

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Meriden	203/577-1111
Midvale	801/577-1111
Minneapolis	612/577-1111
Mobile	205/577-1111
Montgomery	205/577-1111
Murphy	404/577-1111
Nashville	615/577-1111
New Haven	203/577-1111
New Orleans	504/577-1111
New York	212/577-1111
Omaha	402/577-1111
Oregon	503/577-1111
Philadelphia	215/577-1111
Pittsburgh	412/577-1111
Portland	503/577-1111
Providence	401/577-1111
Raleigh	919/577-1111
San Antonio	512/577-1111
San Diego	619/577-1111
San Francisco	415/577-1111
San Jose	415/577-1111
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Whitely, Essex 97508

## programmer

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If you're looking for a challenging career with a leader, look to us. Princess House is a leading national data sales organization located in Southern Massachusetts.

We are actively seeking an experienced Data Processing professional to assume the position of Programmer. The position requires a college degree or equivalent, and 2-3 years programming experience in COBOL and/or BASIC. A minimum of 1 year prior experience on a System 38 is required.

Combine your special personal and professional resources with a leader. Become an important member of a professional team. We offer a competitive salary and highly comprehensive benefit package, including full tuition reimbursement.

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Imagine an atmosphere where extremely creative people are part of a team that designs and enhances products as well as participates in determining the future direction of the company. A philosophy where highly skilled individuals can continue to grow both monetarily and technically.

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Three or more years experience in designing and programming software for computer graphics display in FORTRAN, in one or more of the following areas: menu handlers, screen manager, file manager or library system.

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Three or more years experience in development, planning and analysis of computer systems and graphics. Proven creativity in new product development required.

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Five or more years experience in designing and programming large scale software, primarily in FORTRAN C, or assembler in any of the following areas: statistics, data analysis, report writing, tabular and graphic display and data base management.

We pay outstanding salaries for top professionals. If you are seeking a stimulating, progressive work environment where the management style provides a long-term career opportunity, send us your resume. We'll be happy to discuss our company, its benefits (including 4 weeks vacation per year) and our current projects. **PRINCIPALS ONLY!** Send your resume to:

Manager, Technical Recruitment



SPSS, Inc.  
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For immediate consideration, please send resume including salary requirements to: Mr. Bill Johnson, Personnel Department, Inspiration Consolidated Copper Company, P.O. Box 4444, Clayport, AZ 85502.

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COSC Div. 1200 Boston 800-555-5555  
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### SOFTWARE

LAWSON Plan 800 800-555-5555  
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### PROGRAMMERS

COSC Div. 1200 Boston 800-555-5555  
COSC Div. 1200 Boston 800-555-5555  
Ph. Fenton, Mass. 781

Call Bill Russell (713) 555-5555  
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### SYSTEMS ANALYST

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Health Department of the Washington Medical Center has created an urgent need for experienced professionals. Challenging opportunities in various levels of development, analysis and design.

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The MITI facility at Rome, New York, has openings for experienced professionals to join a group of software engineers and computer scientists performing software engineering research and developing special purpose databases.

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Ideal candidates will possess 8 - 10 years experience in telecommunications and complex hardware/software systems development. Outstanding oral and written communication skills necessary. CICS and IDMS experience and detailed knowledge of IBM hardware/software architecture and internals of one or more IBM virtual operating systems highly desirable.

### SENIOR SYSTEMS ANALYST

Ideal candidates will have 8 - 10 years experience designing and implementing large, high quality on-line systems in an IBM environment. Must have outstanding oral and written communication skills and knowledge of structured analysis and design techniques. CICS and IDMS experience desirable. Responsibilities include the development of long-range information systems plans. Will identify requirements and functional specifications for large state-of-the-art data base systems.

### SYSTEMS PROGRAMMER

Ideal candidates will be experienced in and able to assume complete responsibility for MVS/SP, ACF/VTAM and CICS. Additional consideration will be given to candidates with experience in VM/SP or IDMS. Responsibilities include system generation, product installation, performance tuning and hardware and software planning.

### SOFTWARE ENGINEER

Ideal candidates will have a minimum of 2 years experience in IBM assembler language. Responsibilities include the development and maintenance of software tools used worldwide by STC Field Engineers.

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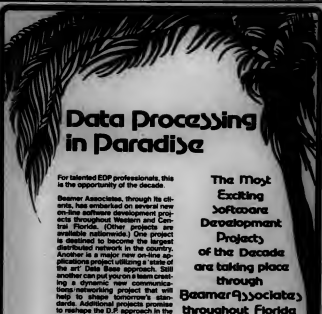
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Para Research offers a series of low cost interactive accounting systems designed to interface with each other so users will have a completely automated financial/accounting system.

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**Decumisor**, \$600, provides complete automatic documentation, with up to fifteen individual reports that describe systems and subsystems in each program. **Clock**, \$250, an advance job scheduler, allows your System/34 to be productive 24 hours a day. **Clock** on the System/38 is available for \$500. **Rescue**, \$250, is a procedure to start program that can also be used to create duplicate programs and procedures.

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### MAPICS MODULES

**MAPICS** Purchasing provides complete tracking status for manufacturers using IBM's MAPICS System. It allows input of multiple vendors per item and interacts with MAPICS Accounts Payable, Inventory Management and Accounts Requirements Planning modules. Users can produce reports ranging from Purchase Price Variance to Suggested Order Placement to Cash Requirements. MAPICS Purchasing eliminates buy entry and typing of purchase orders. Available on the System/34 for \$1,500.

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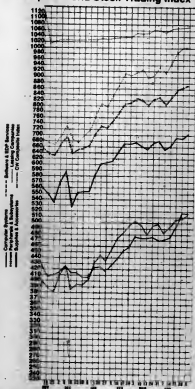
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CLOSED PRICES WEEKEND, MAY 8, 1983

All securities computed  
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Trade Quotes '83  
Cambridge Mass. (212)

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demonstration.

Booth  
P.7926 &  
P.7928

## CONDOR-2 COMPARISON CHART

FEATURE	Condor 2	Televideo 950	Televideo 925	Visual 300	Wyse 100	ADDS Viewpoint 90	Leer Sieglar ADM 24	Qume 108
ANSI x 3 64 Compatible	YES	NO	NO	YES	NO	NO	NO	NO
Detached Keyboard	YES	YES	YES	YES	YES	YES	YES	YES
Soft Setup Screen	YES	NO	NO	YES	NO	YES	YES	YES
Non-Volatile Functions Keys	YES	NO	NO	YES	NO	YES	YES	NO
Number of Keys	10/25 (Std/Optional)	11/27 (Std/Optional)	11/27 (Std/Optional)	12	16 (Std/Optional)	15/20 (Std/Optional)	16 (Std/Optional)	11/27 (Std/Optional)
Maximum Characters in Function Keys	1000	256	Non Programmable	384	64	256	304	Non Programmable
Video Attributes Hidden	YES	NO	NO	YES	NO	YES	YES	NO
Smooth Scroll	YES	YES	NO	YES	NO	YES	YES	YES
Block Mode	YES	YES	YES	YES	YES	YES	YES	YES
Independent Rec/TX Rates	YES	YES	NO	YES	YES	YES	YES	NO
Line Drawing Set	YES	YES	NO	YES	YES	YES	YES	YES
25th Status Line	YES	YES	YES	YES	YES	YES	YES	YES
Screen Saver	YES	NO	YES	YES	NO	NO	NO	YES
PRICE	\$695	\$1195	\$995	\$1150	\$995	\$1095	\$1195	\$895

## of course you would!

That is why we at Falco Data Products are so excited! We feel that the CONDOR-2 is the best high-volume business terminal on the market today with features second to none.

The CONDOR-2 has all the advantages of Falco's popular family of Brilliant Terminals (over 20,000 in use) such as multi-board adaptability (Modem Board, PLOT 10™ compatible Graphics Board, and 64K CP/M™ compatible CPU Board.)

**Falco**  
DATA PRODUCTS

CP/M is a trademark of  
Digital Research  
PLOT 10 is a trademark of  
Bionetics

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